AN ASCENT OF THE MATTERHORN.*

BY WILLIAM FREDERIC BADE.

It was a sultry July day as my young friend Irving Cockroft and I walked into Stalden sur la Viege. There really were three of us, for on the top of the Col de Balme we had fallen in with Herr Elkuss, of Berlin, who, under a shock of gray hair, had preserved a sturdy frame, a cheerful mind, and all his youthful fondness for Alpine trails. We had footed it together to Martigny, taken rail for Viege, and had trudged up the foaming Visp to Stalden. It was noon and very warm. After a generous lunch we went to the station to wait for the queer little train, drawn by a species of Abt locomotive, that during the tourist season daily snorts its way up a sinuous and often steeply inclined track to Zermatt. On the station platform I noticed an individual who by various unmistakable characteristics proclaimed himself a Swiss guide. Our own quest and identity did not escape his practiced eye, for he immediately offered his services. Perhaps long acquaintance with the average tourist, or the presence of our elderly friend, suggested to him the unfeasibility of a strenuous undertaking. He wanted to know whether he might not lead us up the Breithorn (altitude 13,685 feet). This is the easiest of the many climbs undertaken from Zermatt by tourists, and Alpinists have therefore contemptuously dubbed it the "Damenhorn" (Ladies' Horn). Herr Elkuss resented the suggestion with a snort of disgust and an allusion to this fling. The guide immediately

^{*} July 20, 1905.

perceived that he had begun climbing up the wrong chimney, and made haste to come back. He averred that he was ready and able to climb any mountain in the Alps. But Herr Elkuss assured him that he was not looking for any trouble among the precipices, and I was not anxious to engage a man who solicited patronage so far from his base of operations. By mere chance I asked him to give me his name. It was Alexander Burgener, a name I immediately recognized as illustrious in the annals of Alpine mountaineering. The senior Burgener, still active as a guide, made several difficult first ascents, among them that of the Aiguille du Dru. Our interlocutor was Burgener Junior, the eldest son of the former, who also holds an enviable record as a cautious and expert guide. His home is at Stalden, and he was on his way to Zermatt when he met us at the station in Stalden. The more I conversed with him the more I liked him, and before we reached Zermatt had engaged him for a few days of climbing.

During the afternoon of the next day we set out for the Fluhalp *auberge*, intending to climb the Rimpfischhorn for practice. Cockroft had had little experience in mountaineering, and it was deemed desirable to let him try himself out before attempting the much more difficult ascent of the Matterhorn (altitude 14,705 feet).

The altitude of the Rimpfischhorn is 13,790 feet. In the course of its ascent one encounters a variety of climbing over snow, glacial ice, loose rocks, and some precipitous cliffs. While much more difficult than the Breithorn, there is nothing in the ascent of this mountain which a skillful mountaineer would call difficult. Toughened by several days of strenuous footing over high passes, we found the conquest of the Rimpfischhorn easy, and returned in prime condition.

Burgener, who felt that a change of weather was impending, urged that we rest a day before starting for the Matterhorn. But I insisted on starting the next afternoon, for I was due to sail from Rotterdam at the end of the month and did not want to take chances on disarranging my programme. A spell of bad weather sometimes lasts a week in the Alps, and the guides do not like to start for the cabane or Alpenhütte on the Hörnli when the weather is unsettled. I felt that it was better to get Burgener and David up to the cabin at once, so that even if we had to weather a storm there, we could take advantage of the first fair day that came. From Zermatt one has to reckon on two days for the ascent; from the Alpine cabin it can be done in one day. Our counsels prevailed. We laid in a good stock of provisions, had our shoes restudded with a formidable armament of nails, took an additional new rope, and then started for cloudland. During our stay at the hotel we had not mingled much with American tourists. On the register we simply signed the last place from which we had come, and at the table we talked French or German, whichever the occasion suggested. Our Alpine costume helped to complete our disguise, so that several times we were treated to amusing discussions of our identity in good American vernacular. But soon after our return from the Rimpfischhorn, either through the guides or through the head waiter, from whom we obtained a variety of things for the trip, the news leaked out that we were Americans and that we had come to scale the Matterhorn. Immediately we became objects of interest to the Americans at the hotel. They waylaid us in the hall after dinner, and we, nolens volens, had to hold a reception. Cockroft, on account of his youth, became an object of envy and admiration to several lads in the crowd, who afterwards accompanied us for an hour on our way up the Hörnli. But soon their talk gave out and their breath also, and they turned back to the little village over which the westering sun began to throw the massive shadows of the Gabelhörner. The Matterhorn wore a great white kaftan of clouds. By the time we reached the Schwarzsee Hotel it began to rain. We stopped there for a little while to buy additional provisions and some wood for fuel. Then we struck out

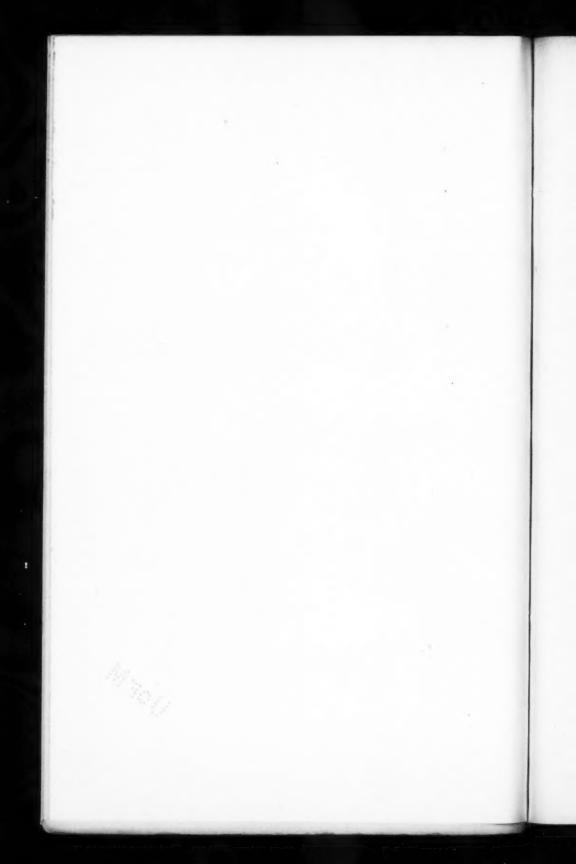
again into the twilight and the rain. Our path soon led along a narrow ridge of rock with precipices on both sides. It was slippery and we had to pick our way with care. Burgener and David were sent ahead to prepare our supper and to look after our comfort for the night, while we came along more leisurely, enjoying the sublimity of the surroundings. At last we sighted the welcome beams of a light in the window of a firmly built stone lodge. Under ordinary circumstances it would not have afforded much comfort. But up there in cloudland the rickety and fuming old stove in the corner, the strawcovered platform, and the loosely hung door, seemed to enfold a world of comfort. Outside the storm raged with increasing fury. Snow, sleet, and rain beat down upon our shelter, sending us deeper and deeper into the blankets. We were not alone in the hut. An old Italian guide, who needed no further touches to play the rôle of bandit, had preceded us with his Signor. We kept the partition between us and them. To attempt the ascent the next day (Wednesday) was out of question. The storm continued and heavy clouds obscured the summit of the Matterhorn. It was a most impressive thing, during a few sunlit hours of the day, to watch cannonades of rock come down the east face and bound out with a fearful roar upon the Furggen Glacier. Rocks acquire frightful momentum on the sides of the Matterhorn. During a part of the way their path from a distance is visible only by the puffs of smoke that rise where they strike. At night they leave a long trail of fire. This and the infernal noise which accompanies them leave no doubt in the mind of the ignorant Swiss peasant that the devil beguiles his leisure moments by sliding down the face of the Matterhorn. Amid such diversions, including a magnificent display of cloud-forms, the day wore away, to be succeeded by another night of wind and storm. Fortunately we had slept a good deal during the day, for our slumbers that night were rudely broken by the arrival of a party under the guidance of Alexander Burgener, Senior.



OBERGABELHORN, ROTHHORN, AND WEISSHORN.
FROM MATTERHORN, AT AN ALTITUDE OF ABOUT 12,500 FEET.



THE BURGENERS—FATHER AND SONS, (ALEXANDER BURGENER, JR., IN THE MIDDLE.)
From photographs by the Author, 1905.



Very early on Thursday morning, July 20th, Burgener was out sniffing the weather. It still looked ominous. There was a high wind, and cloud-wracks, driven with great velocity, almost combed the ledge on which the cabin stood, then dashed up against the towering mass of the mountain, like breakers against cliffs. There was a chance that the weather might clear, and we decided to trust to luck and take the risk. David packed up our lunch, consisting of wine, tea, some meats, and various condensed foods usually taken by mountaineers. I took my camera, a small flask of rum, and a few small articles. Burgener, carrying a new rope and rucksack with some lunch, led the way into the night, for the dawn was scarcely beginning to break. Not far above the cabin we struck the northeast arête. Here we roped ourselves together securely. Cockroft was placed immediately behind Burgener, then came David Andenmatten, and I brought up the rear. After worming our way along narrow ledges, up and around several sharp corners, we struck out upon the east face. Dimly visible beyond the rim of the precipice, far beneath us, yawned the bergschrund of the Furggen Glacier. From a point not far above where we were Dr. William O. Mosely, of Boston, had fallen in 1879. We found no difficulty at this early hour in traversing the Great and the Little Coaloir, two funnel-like depressions, through which the rocks, quarried by frost and wind on the cliffs above, go bounding with fearful momentum to the glacier below. The guides are in great dread of these places, for no skill in climbing can avail against cannonades of rocks. Several persons have in recent years lost their lives in the Great Couloir. Silently, steadily we picked our way up the east face of the mountain, not very far from the northeast arête, and edging toward it more and more as we reached a point about one third of the way up. To this point the climbing could not be called difficult. What from a distance looks like a smooth, unclimbable surface is really considerably rifted and corrugated, af80

fording good foot- and handholds. On the other hand, what from afar looked like easy stair-form ledges often proved to be very disagreeable projecting terraces of more than a man's height. By the same magic of proximity small white patches became hanging fields of hard-frozen, granulated snow, on which every step had to be cut with care. Furthermore, even in the relatively easy places one is never quite unconscious of the sharply descending slope, which on any part of the Matterhorn calls for a cool head and steady nerves. Constant circumspection is the price of life. Being the rearmost, I deemed it wise to watch also the spaces above me. Even the most careful climbers sometimes dislodge rocks. We were going up a somewhat difficult chimney, when suddenly, before Burgener's ejaculation could reach my ear, I saw a rock of about a foot diameter falling directly toward my head. I instantly dodged at the risk of slipping, and not a moment too soon, for I felt the eddy of air the dread messenger was carrying in his wake, and smelt the sulphur of the first contact as it struck with a crash behind me and went bounding into the abyss.

Halfway up climbing became more difficult. We now kept well to the arête. The sun began to break through the clouds and to dissipate the fog-banks through which the summits of the higher peaks appeared like islands. The strong wind was a great obstacle. It swept across the Matterhorn Glacier and up the almost perpendicular north side of the mountain, then spilled itself over the edge of the arête with a momentum that at times threatened to lift us into the air. Yet for several rod-lengths the arête formed the only practicable ascent. It was barely two feet wide in places where the wind had combed the snow of the previous day into a ridge. On the crest of this ridge we moved along the edge of the awful precipice that ends in the crevasses of the Matterhorn Glacier. two thousand feet or more below. When old Burgener was cutting steps above us, the wind would lift great chunks of ice and snow, toss them about like feathers, and

drop them in uncomfortable fashion about our heads. Cockroft had the misfortune to receive a cut on the cheek. Alpine crows also allowed themselves to be tossed about by the wind in such fashion that we sometimes dodged involuntarily, thinking rocks were coming down. The climbing now became more and more difficult as we neared the shoulder. Most of the time we found ourselves spread-eagled against the cliffs with seemingly endless space under our feet. About halfway up, on a narrow shelf, a brief halt was made in order to lighten David's pack of provisions. A mixture of wine and tea was found very refreshing, and a good part of the food we had brought went to appease our appetites. In a few minutes we were climbing again. I tried to use my camera several times, but found that, even in the most advantageous positions, I had to cling so closely to the mountain-wall that no good photographs of the precipices could be secured. Arrived at the shoulder, we divested ourselves of all but the most necessary impedimenta, for now came the tug of war. From this point the ascent is usually made on the north side of the mountain. This remaining stretch of seven hundred feet is the most nervous part of the whole climb. The impression of perpendicularity one gets of this portion of the mountain, when scanning its precipices with a powerful glass from the Zermatt side, is more than borne out by experience when one hangs by the ends of one's fingers and toes over an abyss that yawns between the climber's heels through nearly a mile of blue space.* In the more treacherous places ropes have been swung from iron bars sunk into drill-holes. They serve to give a little confidence to the timid, but must be used with caution, because it is impossible to tell to what extent frost, lightning, and avalanches may have weakened them.

It should be observed that most persons who venture

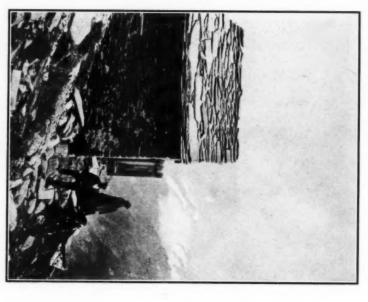
^{*} The character of this precipice may be inferred from the fact that stones drop more than 1,500 feet before they strike the side of the mountain, and those which roll from above and bound out fall to an even greater depth before they make their first contact. At the bottom they land as much as a thousand feet beyond the base of the mountain.

(ERECTED 1899.)

SWISS ALPINE CLUB CABIN ON HÖRNLI RIDGE

to climb the Matterhorn in these days become mere baggage in the hands of the guides, who wisely insist on going in pairs with every inexperienced climber. Inasmuch as the guides cannot collect the full tariff of a hundred francs (\$20) each if they do not get their man to the top, and since it is also a matter of professional pride and future patronage with them to succeed, they do not hesitate to push and drag their man to the top, so long as he can be induced to move. Many a one who has been on the summit of the Matterhorn has gone there in spite of himself, and with the feeling of a victim that is led to the slaughter. I saw one young German that day, evidently a tyro at mountaineering, who would have been willing to mortgage his hope of salvation to be safely in Zermatt again. On the way down he became so terrified that one of his guides threatened to brain him with an ice-ax if he did not move on. It gave the poor fellow at least the courage of anger. Now he doubtless is among those who levy a high toll of admiration for a daring bit of mountaineering, though he confessed freely in the evening that it was the first and last mountain he would ever climb. Audendo magnus tegitur timor.

We were at an altitude of 14,000 feet as we turned to the north side of the mountain at the shoulder. height and the isolation of the mountain exposed us to the full force of the wind, which had reached a high degree of velocity. Rocks and chunks of ice were constantly being torn loose and went bounding past us into bottomless space, like things possessed. No wonder that before the fateful first ascent the simple folk of the mountains believed this dizzy summit guarded by demons. It was bitterly cold. Our gloves were in shreds and we could feel the skin of our hands freezing to the rocks during those momentary halts when Burgener was cutting another step or two in the congealed snow with which the storm of the previous day had filled every crevice. Our rope now was kept taut to minimize the effect of the slightest possible slip. "Stehen Sie fest," would come



SWISS ALPINE CLUB CABIN ON HÖRNLI RIDGE.
(FRECTED 1899.)



RIDGE. WHERE HÖRNLI RIDGE JOINS MATTERHORN.

From photographs by the Author, 1905.



Burgener's voice from above a jutting shelf some forty feet above our heads. "Jetzt," would come the answer. Then one of the middle men would swing out over the abyss while the rest of us hugged and gripped the rocks to save him and ourselves if he slipped. The rock on the north face, or roof, of the Matterhorn is rotten and crumbling. Loose fragments, half-imbedded in ice and snow, offered tempting but treacherous handholds. The rope had to be watched constantly, that it might not catch in a crevice and jerk the climber backward at the very moment when he was scaling a difficult place. It was from this sharp slope, not far from the summit, that Michel Croz, Messrs. Hadow and Hudson, and Lord F. Douglas* fell to their death down a mile of awful precipices. These last few hundred feet of the Matterhorn try the endurance even more than the skill of the climber, because the supreme test of nerve and muscle comes at the end of a most trying and continued climb.

At about 10:30 A. M. we stood upon the summit,—a long narrow knife-edge, covered with snow through which rocks protrude here and there. It was so narrow in places that persons passing each other acted like boatmen trying to change places in a canoe on treacherous water. On the Italian side an immense snow cornice projected into space, ready to plunge downward with any one rash or insane enough to set foot on it. On the north side a gentle slope led to the edge of the awful precipice before mentioned. This slope must have been a rod or more in length in some places. But because it seemed to dip into bottomlessness not far from where we stood, no one manifested the slightest inclination to perambulate on it. The summit must look very different now from what it did when Edward Whymper first saw it in 1865. Frost and sunshine, rain and storm, are continually chiseling it into new forms. This, of course, means that the summit is constantly being lowered. At first I regretted

^{*} July 14, 1865. First ascent. Edward Whymper and the two Taugwalders alone survived. The body of Lord Douglas was never found.

that I did not have with me a Sierra Club register. But I doubt whether any records kept up there would be safe from one year to another. Lightnings constantly play on the summit during storms, and soon demolish any metal object left up there.

By 10 o'clock the clouds had cleared away. The air had been washed clean by the rain, and we looked forth, as from the car of a balloon, upon an infinitely variegated world. Northward the central Pennine Alps crowded the foreground. The valley of Zermatt, so immense to the tourists who throng its hotels, seemed a very insignificant depression at the foot of the mountain. About fifteen miles northwest of us, in an air-line, towered the Mischabelhörner with their massive entourage of glaciers and lesser peaks. Southward the green valley of Valtournanche sloped down into the highlands of northern Italy. The whole of Switzerland, with Alps piled upon Alps, seemed to be lying at our feet.

But there was not much time to enjoy the view. A piercing cold wind that swept the summit urged us to begin the descent. David had shown some symptoms of mountain sickness during the ascent. It was deemed wiser, therefore, not to give him the lead. After a brief parley it was decided that I should lead off during the descent, Burgener bringing up the rear. The distance from the summit to the shoulder required care. The wind had already obliterated our tracks so that I had to cut new steps in many places. To find the descent more difficult than the ascent is not an uncommon experience among Alpinists. It was ours also, especially down the sharp, icv slope of seven or eight hundred feet from the crest to the shoulder. In going down one is more vividly conscious of the precipices on account of the necessary centering of one's attention on things below. It was between noon and I o'clock when we arrived at the shoulder. A flask of brandy left there on our way up put David thoroughly on his feet again. But I kept the lead during the rest of the descent, which by comparison was

relatively easy. The sun became our greatest enemy now. Rocks pried loose by frost, and insecurely imbedded in ice and snow during the storm, left their moorings and went careening down the mountain-side. The danger from them was most imminent in the Great Couloir, for the rocks from a large area on the east face precipitate themselves through this gully. It takes ten minutes or more to traverse it. We had no sooner entered it than Burgener and David became terror-stricken. Each thought the other was going too slowly. Yet too great haste was to court danger of another kind. The character of the climbing left some things to be desired, and the bergschrund of the Furggen Glacier vawned through a blue haze far beneath. I was in the act of working around a sharp corner when a faint but ominous sound from above told us that a cannonade was coming. We all heard it about the same time, and instantly sought shelter by snuggling under the nearest projection on the face of the cliff. I was in an exposed position and tried to get back as quickly as I could. I managed to get out of harm's way in the nick of time; just as I let go my last handhold the dread messengers arrived,

"Rattling with hollow roar down death's decline."

One fragment of rock struck my hand in midair, and with such force that for a time I feared one of my fingers had received serious injury. It turned out to be only a severe contusion. The remainder of the descent was completed without any noteworthy incident. By 4 o'clock we had reached the Alpine cabin, where we stopped long enough to brew a cup of tea and to allow Burgener and David to tidy the part of the cabin which we had occupied. This shelter among the clouds has been erected by the Swiss Alpine Club, and may be used freely by all Matterhorn climbers, on the sole condition that the guides employed leave it in good order.

Zermatt was aglow with lights as we passed the little churchyard where the remains of Hadow, Hudson, and Michel Croz had been interred exactly forty years ago. A kinder fate had brought us, climbers of a later generation, back again from that proud crest,

> "Where the white mists, forever, Are spread and upfurled— In the stir of the forces Whence issued the world."

THE NAME "MT. RAINIER."

[The following communication is of such importance that its publication is considered desirable.—Editor.]

THE DIRECTORS OF THE SIERRA CLUB, SAN FRANCISCO.

Gentlemen: You have assigned to me the duty of making a report for your consideration upon the subject proposed by Mr. Charles F. Lummis; namely, to assist in having the name of Mt. Rainier changed to Mt. Tacoma.

Mr. Lummis' letter of September 5, 1905, is addressed from "The Landmarks Club," of which he is President; he is also the Editor of the Out West magazine, and has marked his opinions on the October and November numbers. In his letter he briefly asks the Sierra Club to join with the Landmarks Club "in an attempt to secure the restoration of the first name by which this noble peak was first known to men."

In the October number of the magazine, he writes "that the Sierra Club... ought to frown upon this historic impertinence, and ought to stand for the restoration of the historic name" (page 368); and in the November number he again urges this club to act in the matter of having "the inappropriate name of Mt. Rainier changed back to its original form" (page 494).

The subject is naturally one that interests the Sierra Club, which has given its support for the retention of the old Spanish names upon this coast, so far as seemed feasible and proper.

Some of you are aware that for the last half-century I have used my best endeavors to identify and restore old Spanish names to important locations along this western coast from Cape San Lucas to Mt. St. Elias.

The four editions of the Coast Pilot of California,

Oregon, and Washington, and one of Alaska, attest to that fact.

As year after year I became more familiar with each mile of the coast line, and with the narratives of the early navigators, I entered upon the self-imposed task of writing the "Voyages of Discovery and Exploration on the Northwest Coast of America, from 1539 to 1603"; the "Identification of Drake's Anchorage on the Coast of California in 1579"; and other works involving discoveries on this coast, by land and by water, and by Spaniards, English, French, and Americans.

I have now ready for publication three hundred and ten manuscript pages on the "Discovery of San Francisco Bay, and the Rediscovery of the Port of Monterey," more than one hundred pages on the origin of the name California, and other matters of similar import. To aid me, I have obtained copies of manuscripts from the

British Museum, from Madrid, and elsewhere.

I have believed in retaining and in applying all the old Spanish names; and have utilized Indian names when they were descriptive, and would use them all through Alaska where the prospector may need the services of native guides.

During six years' continuous service in the Puget Sound region, 1852-57, we retained the Indian, Spanish, and English names where they could be verified. The Hudson's Bay Company factors and traders used Indian names.

When there was no name for a permanent object available, it was of course necessary to adopt some appellation to headland or rock or anchorage, in order that it could be recognized in the Government records and charts.

In our publications, we have always expressed our admiration for the heroic labors of the early Spanish navigators on this coast; of the almost superhuman efforts of Bering and Chirikof; of the unequaled surveys of Cook and Vancouver; and of the daring and privations of the fur traders, English and American.

Within the last year, after years of waiting, we have received tracings from the originals of twelve early Spanish surveys on the Northwest Coast, with hundreds of names which we have placed upon Coast Survey charts for the Bureau at Washington. They have no counterpart in the United States, and we hope to obtain others.

We pray you will pardon this much of what we have been doing upon this coast since 1850, to gather the facts about the names thereon; but it seemed necessary to indicate that the matter of "historic" names had been constantly before us in geodetic and geographic work.

It is now pertinent to ask, By what authority are geographic names applied to special land and sea objects?

We need not go back to the early centuries; we must be governed by the methods and usages of recent date; and we may fairly assert that the first and highest authority is,

(1) By governmental decree. After that we acknowledge

(2) The accepted right of the discoverer in a new country with uncivilized inhabitants, or with no inhabitants.

(3) The long usage of geographers, navigators, travelers, and historians.

(4) The general opinion of experts in either or all of the preceding sources of authority.

(5) The striking peculiarity of the locality or object; and lastly,

(6) The names adopted by any other country for geographic objects; although this might be considered as coming under the first heading.

Under the first source of authority, a case was presented by the Government of the United States in the discussion of the proper location of the boundary-line between the United States and Great Britain from the parallel of forty-nine degrees through the Gulf of Georgia, Washington Sound, and the Strait of Fuca to the Pacific. It was declared that all the waters from

the forty-ninth degree of latitude in the Gulf of Georgia, to Olympia in the south, to the entrance of the Strait of Fuca at the Pacific entrance, should, "for the purposes of this discussion be known as Puget Sound."

A more recent case is that where Germany changed the names of all the islands and waters northeast of New Guinea, in the year 1884. The names used by the Dutch, English, and French from their early discoverers, and those names used by the natives, were wiped from the maps and geographies. Every trader had known the native and the previously adopted names, but "the maps have been modified in the spirit of a mistaken or aggressive patriotism," etc. (Reclus, Volume Australia, page 319.)

The accepted right of the early discoverers has never been traversed by competent geographic authority. Carver named the Oregon or Oregan from Indian reports, although he never saw it, but Robert Gray first entered the mouth and named it the "Columbia's River," after one of his vessels. Vancouver, who had failed at the entrance, promptly acknowledged Gray's rights; and after Broughton, in the *Chatham*, surveyed it to Point Vancouver, Vancouver called it the Columbia River on his charts and in his narrative.

Meares' name of Cape Disappointment is retained, and Cape Hancock of Gray is forgotten, but Point Adams lives. Gray's Bay in the Columbia is retained, and Gray's Harbor remains.

We need not refer to Wilkes (1841) applying the names of his officers to the islands of Washington Sound, and proposing to call the Sound the Navy Archipelago. They are reminiscences.

The Spaniards, in 1774-93, Cook (1778), Vancouver (1792-94), were the early governmental discoverers and explorers on the Northwest Coast after the discoveries of Bering and Chirikof in 1741.

Neither party knowingly interfered with the original names given by the others. Vancouver's narrative shows the friendly relations between him and the Spaniards, who generously gave him tracings of their earlier surveys; and he accepted names given by the fur traders.

These men were exploring unknown regions inhabited by uncivilized peoples, whose language they had neither the time nor opportunity to learn. To give definition to their narratives and charts, they were compelled to adopt names for given objects of which they had first determined the geographic position, and made known to the civilized world.

No man has ever done more or better work than was done by Vancouver and his officers and men on this Northwest Coast, executed with dull sailing ships, and with instruments that would not be used to-day.

He did not come upon "this coast for the purpose of securing it for English dominion" (Out West, page 368). His voyage was "undertaken by His Majesty's command, principally with the view to ascertain the existence of any navigable communication between the North Pacific and North Atlantic oceans." For this purpose, he was directed to delineate the "Continental Shore"; and he completed a survey of discovery and exploration that is unique in the published history of geography.

The assertion on page 368 of Out West, that "neither this coast nor this country is in his [Vancouver's] debt," is not warranted by the facts. There is no inlet on the Northwest Coast south of the Peninsula of Alaska, to the head of which his boats did not penetrate. His latitudes are remarkably close to the best determinations of to-day. We have observed at many places where he did, and never found an error in the latitude exceeding two geographic miles.

In the conventions of 1822 to 1825 between Russia and the United States, and Russia and Great Britain, the only charts available for that long diplomatic controversy were those of Vancouver; by the decisions of those conventions Russia held all the Archipelago Alexander; and in 1867 the United States purchased from Russia the

territory of Alaska, won by Vancouver's silent but unanswerable testimony.

In 1849-52, Tebenkof, Captain of the first rank in the Russian Navy, and sometime Governor of Alaska, had published his great atlas of thirty-eight charts from Cape San Lucas to the Arctic. He adopted the scale and outline of Vancouver's charts.

In 1867, when we officially visited Alaska to make a geographic reconnaissance, and report upon the resources of that region, the United States revenue-cutter *Lincoln*, which carried our party, used the Tebenkof-Vancouver charts from Victoria through the interior passages, to the head of Lynn Canal, to Sitka, Kadiak, and the Aleutian Islands.

These charts continued in use until the United States Coast and Geodetic Survey, or the other branches of the Government, and the British Government, made more detailed surveys.

In Vancouver's application of names—and he was far from prolific—he was conforming to the precepts of his day and of his profession. That method has been followed to the present time; it is seen in the latest Antarctic explorations. If Roald Amundsen has discovered some new anchorage, some new channel, or located some mountain peak in the Arctic, he is entitled to name them or to apply the Esquimau designation. Geographers will associate his name with his discoveries.*

Mts. Hood, St. Helens, Rainier, and Baker are found on Vancouver's charts of the coast within the range of his discoveries. Each was unique in its mass and snow covering, and in their heights towering far above the general crest-line of the Cascade Range. He particularly mentions naming "Mount Rainier" and "Mount St. Helens," and his reasons therefor.

^{*}As we are reading the proof, we may add that, upon our suggestion, the Hydrographer of the Lords Admiralty and the Hydrographer of the U. S. Navy Department have directed that the name Amundsen Gulf be applied to that unnamed area of water in the Arctic between Cape Bathurst and Cape Baring, and be placed upon all official charts.

George Vancouver did not ignore Indian names, whenever he could obtain them from the Spaniards and the fur traders. He had used all the Hawaiian names he could gather; and on this coast he refers to the promontory Classet, Tatooche's Island, Clayoquot and Nootka sounds. The Indians he met with were not desirable companions, and he was not collecting folk-lore. He was presenting fresh discoveries in geography to the world; he was settling a commercial problem.

His narrative and his charts indicate his acceptance of every Spanish name he could ascertain from the navigators and Catholic missionaries. He left the impress of his high character upon the good fathers and the Spanish officers through three years of intercourse; as he did upon Kamehameha and the Hawaiians.

One of the two principal magazines on the Pacific Coast devoted to mountain climbing is the "Mazama, a Record of Mountaineering in the Pacific Northwest," published at Portland, Oregon. The number for October, 1900, is devoted to the ascent of Mt. Rainier, and the barometric determination of its height. Throughout the text no other name is referred to, and the illustrations carry the historical title June, 1897. In the annual number of Mazama, 1905, recounting the second ascent of Mt. Rainier by that body of snow peak climbers, and some of the members of the Sierra Club, a full and very acceptable array of incidents and impressions is presented by several writers; and in general the Vancouver name for the mountain is retained. Henry Gannett, the geographer of the United States Geological Survey, writes that "the King of all these volcanic cones of the Cascade Range is Mount Rainier." One professor uses the name in "deference to supposed geographic authority"; but the consensus of expression is, "Mount Rainier."

The same can be said of the 1906 BULLETIN of the Sierra Club; the first title is "The Sierra Club Ascent of Mt. Rainier." The Weather Bureau Service uses the name; and very naturally the Joint Commissioners of

"the Mount Rainier National Park." Also the State Geologist of Washington, and the President of the Appalachian Mountain Club. Professor McAdie, who was on that ascent, remarks that all Vancouver's names "have been graciously accepted and remain unquestioned save one, Mount Rainier."

Vancouver's names upon this Western Coast are part of the history of geographic discovery and exploration, promptly given to the world in his narrative and charts; and have been unchallenged by geographers of all nationalities.

They were adopted by the first settlers of Oregon; by the Americans who first came to the Puget Sound region; by the Territorial Government under Governor I. I. Stevens (retired major United States Army, afterwards killed at Chantilly); and naturally fell into use by the army officers at the military posts of Vancouver, Steilacoom (Tchil-i-com) and Port Townsend (Townshend); and by the United States Coast Survey when working in the great arms of the sea from the entrance of the Strait of Fuca eastward, northward, and southward.

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Of course, they were in use by the factors and employees of the Hudson's Bay Company, who introduced Indian names when necessary.

Even before the advent of the American as a settler, the United States Exploring Expedition under Wilkes used the names Baker, Rainier, St. Helens, and Hood, and they are on the published maps of 1841.

From 1852 to 1857, both inclusive, when surveying in the Puget Sound waters, we never heard names other than those of Vancouver and the Spaniards. We sought Indian names as shown on the Neeah Bay sheet of 1852.

In later years, we have learned that the Indian name of Rainier was Ta-gho'-ma, with a deep guttural stress on the second syllable.

In July, 1857, when Lieutenant A. V. Kautz, U. S. A., was stationed at the military post at Steilacoom, he made

an attempt to reach the summit of the mountain, accompanied by Surgeon R. O. Craig and Private Dogue. It was Mt. Rainier, although he had Indian guides, and he knew some of their language. During Governor Stevens' term of office, he never used any other name.

When P. B. Van Trump and Hazard Stevens made the ascent, in 1870, the published accounts called the mountain Rainier. In 1876, when General Hazard Stevens republished a more detailed account of that successful ascent in the Atlantic Monthly, the title was "The Ascent of Takhoma," with this explanatory footnote: "Tak-ho'-ma, or Ta-ho-ma among Yakimas, Klickitats, Puyallups, Nisquallys, and allied tribes of Indians, is the generic term for mountain, used precisely as we use the word 'mount,' as Takhomah Wynatchie, or Mount Wynatchie. But they all designate Rainier simply as Takhoma, or The Mountain, just as the mountain men used to call it the 'Old He.'"

During the Indian War or 1855-56 in that region, the man who would have dared to suggest any Indian name to the mountain would have been tabooed; but times and conditions have changed.

In 1882, Hon. Elwood Evans, then of New Tacoma, (and a classmate with us in the Central High School of Philadelphia,) called together several old and reliable Indians to give him the proper name of the mountain. We give the result of this conference in the statement of Mr. Flett.

The claim that the Indians on the east and west sides of the Cascade Range always called Mt. Rainier by the name Tacoma is not sustained by native evidence. This is clearly shown by the proceedings of the "Tacoma Academy of Sciences," published in pamphlet form in 1893. At this special meeting old and young Indians of the Puget Sound region insisted that their name of the mountain was "Tacobet."

Besides these Indians in attendance, there were letters read with over forty names of Indians who had declared

the name of the mountain as "Tacobet"; among these was the daughter of Chief Seattle. These Indians all belonged to the Puget Sound side of the mountain: a few belonging to or representing the east side of the mountain said "the old Indian name is and always was "Ta-ho-ma."

Col. B. F. Shaw, who had been an Indian interpreter, wrote that the word Tacoma "belongs to the Scadgit Indian language, and means plenty of food or nourishment."

Mr. John Flett, who came to Puget Sound in 1841, gave evidence to Hon. Elwood Evans in 1882, that "the Indians from the east side of the mountains (the Klickitats) call it Ta-ho-ma," . . . which "meant a woman's breast." . . . Mr. Flett "translated their guttural expressions, which resulted in aggregating the word 'Tahoma,' though really no two Indians pronounced the word exactly alike," (page 6).

Mr. T. I. McKenney, at one time Superintendent of Indian Affairs, thought "the present 'Tacoma' was a corruption of the Indian 'Tacopa' or 'Ta-co-pe,' which in

Indian means white" (page 6).

Theodore Winthrop, in his book published in 1862, had a Klickitat guide from Puget Sound to the Dalles, Columbia River, in 1853; and from this guide he obtained the name "Tachoma," which several authorities say is strongly guttural.

The address of Judge James Wickersham, covering the extracts we have quoted from the Proceedings of the

Academy, is dated February 6, 1893.

In August, 1883, Messrs. Geo. B. Bayley, of San Francisco, and P. B. Van Trump, of Yelm, made the ascent of Mt. Rainier to the southern peak or edge of the old crater; and at the close of the published description, Mr. Van Trump writes: "Our neighbors of Tacoma, and some late writers, are dropping the time-honored name of Rainier, and are giving the mountain its Indian appellation, but spell and pronounce it the same as the name of the would-be city of the West. If the Indian

name is to be adopted, why not give it also its guttural pronunciation, Tachoma, with the German sound to the letters ach?"

In 1888, Mr. Van Trump again made the ascent with John Muir and William Keith. In a long letter which he wrote to us in September of that year, he says: "We did not, greatly to my disappointment, journey to and explore the north peak (which Stevens and I named Ta-ho'-ma), the party not being willing to stop long enough on the Mt. top to accomplish that purpose."

After Winthrop, that is the first definite mention that we recall of the name being given to one of the three summits of Mt. Rainier.

And it may be permitted us here to state that our colleague on the United States Coast Survey, James Smyth Lawson, long a resident of Olympia, determined the geographic position of the three prominent points, and the heights of two of them trigometrically, in 1870—the "middle, highest peak," 14,444 feet above the sea; the "south, lowest peak," 14,279 feet. The former is 32".77 of latitude north of the latter, and 2".28 of longitude west. We had made the first observations for position in 1856, and Lawson in 1867.

When the citizens of Tacoma first proposed the change of the name Rainier, we do not remember, but communications were made to the General Government before 1890. In that year, the Executive Order for the organization of the "United States Board of Geographic Names" was issued on the 4th of September by President Harrison. The following gentlemen composed the Board:

Professor Thomas C. Mendenhall, U. S. Coast and Geodetic Survey, Chairman.

Andrew H. Allen, Department of State.

Captain Henry L. Howison, Light House Board, Treasury Department.

Captain Thomas Tuttle, Engineer Corps, War Department.

Lieutenant Richardson Clover, Hydrographic Office, Navy Department.

Pierson H. Bristow, Post-Office Department.

Otis T. Mason, Smithsonian Institution.

Herbert G. Ogden, United States Coast and Geodetic Survey.

Henry Gannett, United States Geological Survey. Marcus Baker, United States Geological Survey.

Bulletin No. 1 of the Board was issued December 31, 1890, through the Smithsonian Institution; and on page 7 is this declaration:

No. "170 Rainier Mt. Washington, U. S. Tacoma." In the first edition of 1890-91, published in 1892, "Rainier Mt. Washington," page 35. In the first edition of the second report, 1890-99, Washington, 1900; "Rainier; mountain peak in Washington. (Not Ranier nor Takoma"); page 105. In the second edition of that report, 1901, "Rainier; mountain peak in Washington. (Not Ranier nor Tacoma"); page 105.

If there were any lingering and sympathetic doubt in the matter we add the following authority:

"It is hereby ordered that there be added to the duties of the United States Board of Geographic Names, created by Executive order dated September 4, 1890, the duty of determining, changing, and fixing place names within the United States and insular possessions, and it is hereby directed that all names hereafter suggested for any place by any officer or employee of the Government, shall be referred to said board for its consideration and approval before publication.

"In these matters, as in all cases of disputed nomenclature, the decisions of the board are to be accepted by the departments of the Government as the standard authority.

"Theodore Roosevelt.

"The White House, January 23, 1906."

This examination has extended beyond what we expected to present, yet it seemed desirable not to appeal to any local prejudices, but to lead through good authority to that of the highest governmental decree. And we respectfully submit that in this instance such decree is in conformity with the usage of historians, geographers, and government records, through more than a century; therefore we suggest that the Sierra Club can take no action whatever in urging the use of the new name proposed for Mt. Rainier.

Very respectfully and truly, your obedient servant,

GEORGE DAVIDSON.

2221 WASHINGTON STREET, SAN FRANCISCO, CAL., February 20, 1906.

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THE SECOND KING'S RIVER OUTING.

By MARION RANDALL.

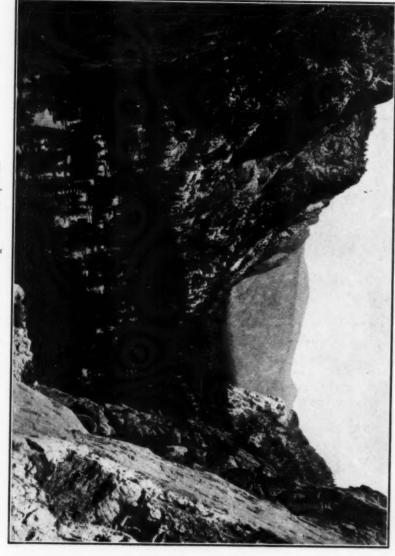
During the early part of the spring of 1906 there were indications of an unusually large enrollment for the second Outing to the King's River Cañon. The members who had visited this region four years ago and those of us who were unacquainted with it were alike enthusiastic; and it seemed probable that transportation facilities would have to be taxed to the utmost to provide for the large party that was expected. But April, with its demolishment of well-laid plans, wrought havoc among the list even of the most loyal, while tidings of high water and lingering snow a little later alarmed the more timid among the tenderfeet until there remained only eighty intrepid Sierrans whom fire, 'quake, and flood could not deter from their wanderings.

Except for the one stageload of Southern California members who traveled by way of Visalia, the whole party forgathered at Sanger in the early dawn of July 3d, and there took stage for Sequoia Lake, a few miles beyond Millwood, where we spent our first night under the

open sky.

Wednesday morning found us all ready to take the trail, and for three days we traveled in unevent-ful fashion through still forests of fir and pine, with here and there an open meadow or a flower-bordered stream to brighten the way. The lower trail, leading through Huckleberry Valley and Long Meadow, which we took to avoid the snows of the higher route, though longer than that by way of Horse Corral, has the advantage of passing through five or six small groves of sequoias after leaving the General Grant Park. Within the park one looks upon the giant trees with a somewhat

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KING'S RIVER CAÑON, FROM COPPER MINE. From photograph by J. N. Le Conte.

alien eye. They are set apart, fenced around, labeled, and made a show for the curious till half their charm is lost. But as one journeys farther from accustomed ways, where each new height brings a wider outlook into the stern gray heart of the mountain country, a turn of the trail brings one unexpectedly into a group of these silent, majestic trees. It is then that a more intimate sense of their beauty possesses one, the marvel of that life where "a thousand years are but as yesterday," and wonder, even admiration, is lost in reverence.

We had heard that the King's River was in flood, but I think few of us appreciated what that meant until we first caught sight of the foaming white torrent that raced through the cañon below Cedar Grove. It was a wicked-looking, dangerous river, full of swirls and eddies and treacherous backwaters whence some passionate, despairing living thing seemed to be fighting to escape. Willow bushes, borne down by the force of the rushing waters, barely lifted their straining tops above the current; trees outlining the normal banks stood six feet deep in water; and on one pine fairly in the middle of the stream a large placard gave futile warning of the danger from forest fires.

Of course, bridges and footlogs had suffered a whole-sale destruction, and the main bridge, leading to our permanent camp, where a large part of the commissary supplies were already installed, had been swept away. Rangers and packers were already at work felling trees for its reconstruction; so we went into camp at Cedar Grove—and waited. As many of the Sierra Club men joined heartily in the work, the first stringer was very soon across. But unfortunately the river rose again, carrying away the log and leaving four honored members who had shinnied across upon it to join the workers on the other shore, marooned, with not even a toothbrush among them.

In view of some such mishap, however, another plan had been perfected for a temporary bridge, utilizing the

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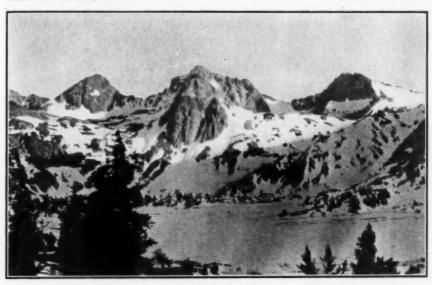
remains of the old footlog which formerly spanned the river just above the mouth of Granite Creek. Nearly every man in camp fell to work on this; and the marooned men on the other shore, inspired by a longing for the solid comforts of their dunnage-bags, worked with such zeal that they not only did their full share of bridge construction, but likewise built a difficult piece of trail through a talus-pile in one place where the meadow was submerged.

At the end of the week we moved to the permanent camp close under the Grand Sentinel, a spot dear to many a Sierran from the associations of four years ago. Here we found that our troubles were not yet at an end, for the bridge which led to the Bubb's Creek trail was sadly

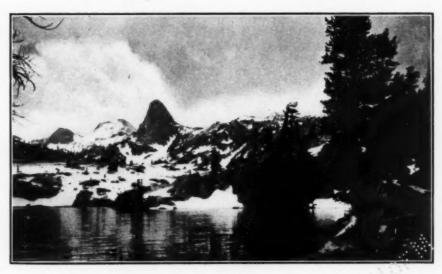
in need of repairs.

However, the bridge-builders decided to take a few days of rest and relaxation, and to that end a knapsack trip was planned into Paradise Valley. There is a trail into Paradise, but no one had been over it as yet, and no one knew what pitfalls snow and flood might have laid for the mules. So we left them behind and started, eighteen strong, with strange, unshapely bundles upon our backs and looks of conscious, joyous heroism on our faces. We chose the route by Mist Falls and over the talus-piles. Crossing a talus-pile does not mean merely walking. It means jumping, bending, reaching, crawling over, under, through, and around boulders that may be as big as your house or as big as your hat, but which are sure to have sharp corners or unsteady foundations or slippery surfaces to work your undoing one way or another. We had about three miles of this before we reached Paradise, a cañon similar to the main South Fork, but wider, with broader meadows and more numerous waterfalls.

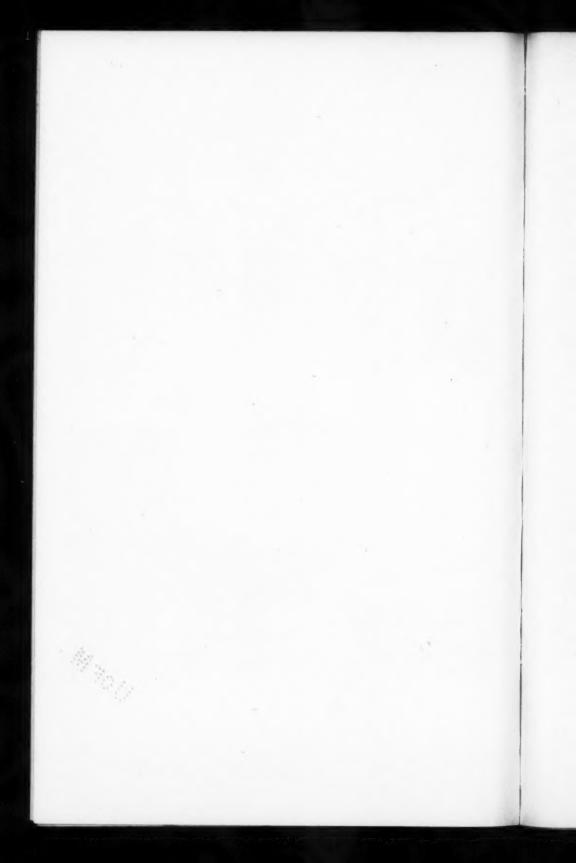
Paradise Valley has a charm far surpassing that of the better-known cañon,—the indescribable charm of untrodden ways. The meadows have a virgin freshness; there is not a cabin nor a corral nor a sign of man's



MT. RIXFORD AND RAE LAKE (FROZEN) JULY 24, 1906.



FIN DOME.
From photographs by Marion Randall, 1906.



occupation save the cluster of blackened stones that here and there marks the site of a wanderer's camp. From end to end the river runs between wooded banks, now flowing dark and somber under the shadow of pines, now radiant and glimmering in the green diffused light under the twinkling aspens. It is such a happy river. It seems to have caught all the merriment and the exultation of the score of waterfalls that tumble down from the high country to join it. Nor is the more austere beauty of cliff sculpture wanting—massive creviced walls where the blue shadows linger till midday.

Although disappointed in the fish we expected to catch, we found our little shelter among the pines a delightful camping-place, and were only sorry that we were not prepared for a longer stay. We spent the morning in a leisurely walk to the head of the valley, where four of us, separated from the others for the moment, had the good fortune to start a deer.

Leaving Paradise in the afternoon, we had a most impressive view of a storm gathering on the high mountains which encircle the valley and which come into sight as one climbs the zigzig trail up the western wall,-Pyramid and Arrow peaks to the north; eastward, rising directly above the gulf of the valley, Mt. King and Mt. Gardiner, sharp gray peaks streaked with snow; and to the south and southeast, Brewer and the numberless peaks of the summit crest. Over all this long jagged chain the shifting clouds were scattering now sunlight, now shadow, veiling mountain-tops in ghostly mist garments and sending little flickering sprites of sunbeams dancing up and down the cañon walls. Our camp that night, high among the tamaracks, near Goat Mountain, overlooked the same wide stretch of mountain land; and there in the intervals of homely camp toil, the making of fires, the cooking of food, and the washing of dishes (oh, blessed enchantment of mountain days!), we could watch the marvelous change from alpenglow to twilight with never a thought of incongruity to mar its wonder. But herein, perhaps, lies one secret of the keen joy of gypsy ways,—there is enough of this contact of common things to make life sweet and wholesome. To walk with one's eyes forever fixed upon the stars is just as narrowing to the field of vision as never to lift them from the ground.

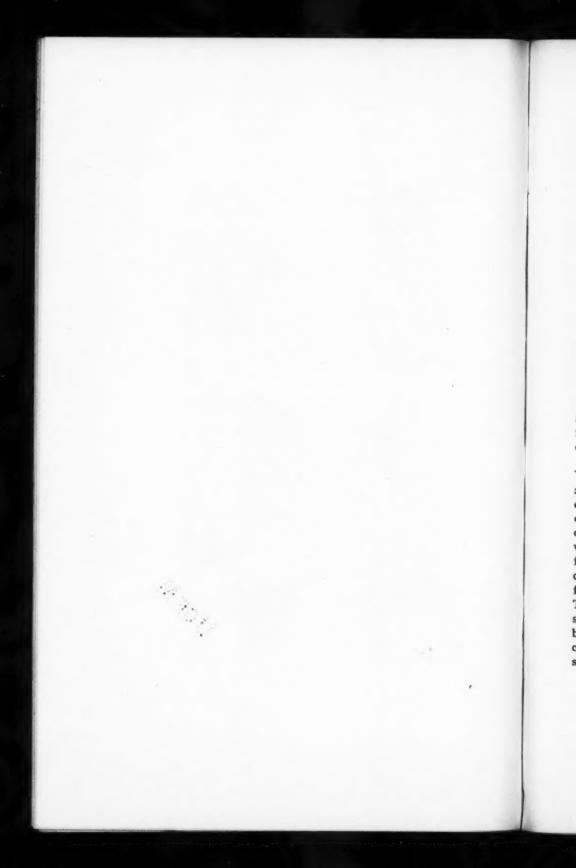
The next morning we met some twoscore Sierrans on top of Goat Mountain (12,800 ft.), a peak without pretensions either of great height or difficulty, but which nevertheless commands a splendid outlook over the Sierra from the Palisades to the Kaweahs. The climb was remarkable only for the diversity of routes chosen by the many separate parties. It is one of those mountains whose highest point is not determinable from below, and even some of those who escaped the lure of False Peak found themselves separated from the real summit by an insecure knife-edge and a treacherous bit of snow. But in their many and various ways one and all finally reached the top and in due time joyously coasted down the snow and made their way back to camp by the Copper Creek trail.

This, as it happened, was the only mountain climb of the Outing, for even while undergoing repairs the bridge leading to the country about Bullfrog was swept downstream. We were greatly disappointed, for we had expected to have at least a week among the high mountains; but in lieu of this all those who wished to do so were given the opportunity to visit Paradise Valley (with a pack-train this time), where we made voyages of discovery up the little-known cañons of Wood's Creek and the upper Paradise Fork.

The plan had been to take the mules only into Paradise; but after spending two nights there many of us wished to journey still farther into the unknown country. Even the packer confessed to this longing; and while some members of the party were satisfied to return to the main camp, about twenty-five people, accompanied by the four animals who succeeded in swimming the river,



KING'S RIVER IN FLOOD, From photograph by Marion Randall, 1906.



started up Wood's Creek. From this time it was virtually a knapsack trip, for the animals could carry only the commissary, leaving each mountaineer to shoulder his own bedding. It was amusing to note how, as difficulty was added to difficulty, the lesser enthusiasts one by one dropped back into the straggling ranks of those returning to camp, until the fourth day saw but sixteen following the trail to the pass.

It was not much of a trail,—that was the trouble. The advance sheet of the Geological Survey, the only map of that region yet published, showed the way through,—over the crest near Rixford and down to Lake Charlotte and Bullfrog,—but gave no hint of the tangled undergrowth, the snowbanks, and the avalanche-furrows through which the plucky mules had to fight their way. Snow bridges over the lusty young river twice saved the day for the mules, and even the pedestrians were compelled to resort to unusual methods of crossing the troublesome stream, once making use of a great rubbish heap of splintered pine deposited in the stream-bed by avalanche and flood, and again resorting to that undignified but wholly satisfactory form of ferry, riding double on a mule.

It was a wild, sterile, rockbound place, this cañon of Wood's Creek, and our mules found little cheer that night at our camp above Rae Lake. Indeed, there was at first cold comfort for either man or beast, for a heavy thunderstorm drenched both us and the firewood, and the only available camping-ground was a granite oasis in a waste of snow—a dreary enough outlook, too, over the frozen lake to a wall of cold snow-peaks with a dark canopy of storm-clouds above. But supper and a cheerfully blazing fire wrought an amazing change in things. The clouds parted at sunset; westward Fin Dome and the sharp summit of Mt. King rose blackly against the sky, barring the way to the sunset land; but Rixford and the circle of grim peaks to the south and southwest were softened and glorified in the evening light. And under

the twisted tamaracks, where the fire now sparkled merrily, we sat contentedly and watched the pale crescent moon shining ever brighter as the darkness gathered, until it too dropped out of sight behind Fin Dome.

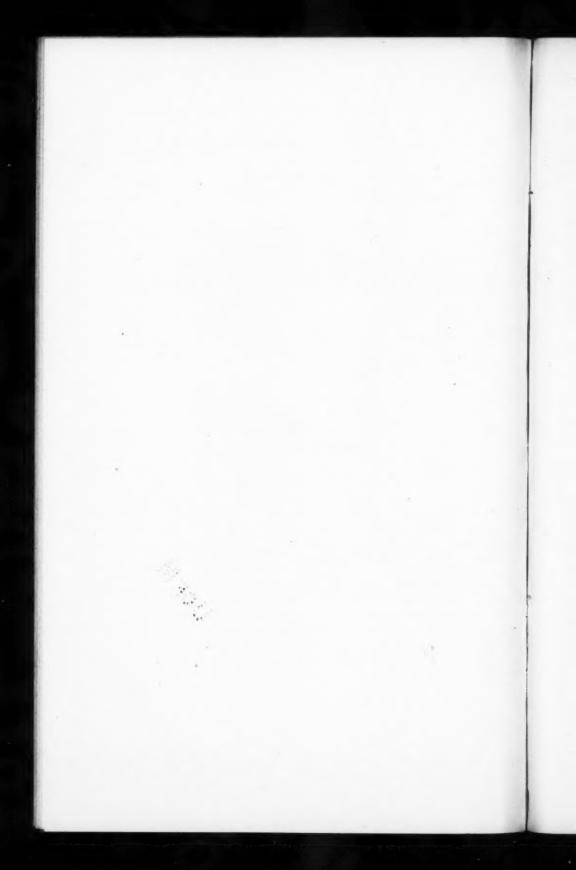
The next morning's undertaking was the most hazardous of the outing,-the crossing of Glenn Pass. The luckless mules had first to swim the narrow neck of water connecting the two basins of Rae Lake and then plow their way through the snow to the foot of the pass. Fortunately for us the snow was in perfect condition and gave the firmest footing possible under the circumstances. A tongue of shifting rock led part way up the wall, but above this the snow was so steep that the mules were unpacked and led up it unencumbered, while the kyacks were carried to the summit by hand. It was anxious work watching their slow progress and realizing that a single flounder might mean the loss of an animal. Nor was our anxiety lessened on reaching the summit, for the other side of the pass looked fully as forbidding as the steep incline up which we had just labored. It proved to be less difficult than we anticipated, however, for the descent was made with only one slight mishap, one of the mules falling and having to be unpacked before he could be induced to rise.

At Lake Charlotte we found only a few patches of meadow appearing through the snow, and Bullfrog, where we made our next camp, was likewise still frost-bound. So, as our provisions were running low, and as the mules needed better pasturage than the scanty vegetation of the upper country afforded, we decided to journey down Bubb's Creek the next morning to Junction Meadows and return to camp the following day instead of remaining at Bullfrog long enough to climb University Peak, as we had hoped to do.

On the whole, and in spite of the many disappointing and enforced changes of plan, the Outing was exceptionally enjoyable. The unusual conditions gave rise to so many unusual experiences and laughable incidents that



BLACK MOUNTAIN, FROM GLENN'S PASS,
From photograph by Duncan McDuffie.



we might well thank the tumultuous river for the trouble it thought to cause us. It has been a matter of pride with the Sierra Club that the management of its outings has been so perfected that the goodly fellowship of the multitude is exempt from the responsibilities and labors of normal camping experience; but I think that very few of those whose spirit and enthusiasm and good brawn went into the building of those bridges would exchange for the most perfect outing ever organized the consciousness of having with their own aching backs and blistered hands upheld one of the foremost aims of the Club—to make smooth the way for those who may follow.

THE MOTION OF THE NISQUALLY GLACIER, MT. RAINIER.*

BY JOSEPH N. LE CONTE.

Mt. Rainier is an extinct volcanic cone situated in the western portion of the State of Washington. Its highest point, as determined by the U. S. Geological Survey, is in Latitude 46° 51′, and Longitude 121° 45′.5, and its altitude, according to the latest barometric measurements, is about 14,400 feet. The mountain rises in the midst of a heavily timbered region on the western slope of the Cascade Range. This region does not average over 4,000 feet above sea-level, so that the mountain rises as a great isolated mass, visible for many miles.

The humid climate of this portion of the continent gives rise to an enormous precipitation along the coast, most of which falls between November and May. Above the level of 6,000 feet, almost the whole of this is in the form of snow. A system of glaciers is thus formed on Mt. Rainier, which has a common and continuous névé mass around the crater extending down the slopes for a distance of about a mile. Below this the névé masses become separated by thin rocky spurs, and finally consolidate into a very perfect series of eleven radiating ice-streams, having a striking resemblance on a map to the rays of a starfish. The circle which includes the ends of these glaciers at the present time is about ten miles in diameter.

During the summer of 1905, the writer, as a member of the Sierra Club's Outing to Paradise Park on the south slopes of this mountain, had the opportunity of making a few measurements of the motion of the Nis-

^{*} This article appeared in "Zeitschrift für Gletscherkunde," I. Band, 1906, edited by Professor Dr. Ed. Brückner and published by Gebrüder Borutraeger, Berlin, S. W. 11 Dessauer Strasse, 29.—Editos.



HEAD OF NISQUALLY GLACIER.

(SHOWING THE FIRST 8,000 FEET OF VERTICAL DESCENT.)

From artotype in Nature Magazine.

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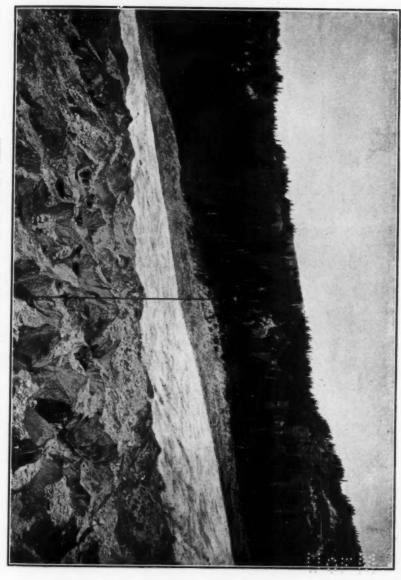
qually Glacier during the month of July. The position of the end of the glacier was determined, and other of its characteristics noted, in the hope that future observers may be able to determine the changes that take place as time goes on.

The Nisqually Glacier takes its rise on the southern rim of the crater, and for the first three miles of its course has a direct southerly trend. The eastern side of its trough is formed by a high conspicuous mass of rock known as Gibraltar, and the western side by a relatively low rocky spur separating it from the next large glacier in that direction, the Kautz. Within the first three miles the main névé stream makes a total descent of about 8.000 feet, and the surface is broken by enormous ice-falls and faults. The average slope in this part is therefore about thirty degrees, and the average width, including its western tributary, the Stevens Glacier, may be taken at a mile and a quarter. At the end of this steep descent the grade decreases to about ten degrees, and the ice here forms a great crevassed field into which the Stevens Glacier falls over a sheer cliff about 300 feet high. A little farther on the ice becomes fairly consolidated and turns to the southwest, maintaining this trend throughout the rest of its course. A mile below the junction of the Stevens, the glacier passes over an ice-fall, descending perhaps 500 feet in a quarter of a mile. The surface is here cut by large transverse crevasses into an almost impassable mass of séracs. Below the ice-fall the stream again consolidates into a beautifully smooth glassy surface, with only small fractures a few feet in width. The slope of this part for over a mile is about eleven degrees. Marginal crevasses now begin to show in a marked degree, and these become larger and larger through lateral melting as the snout is approached. The ice ends abruptly in a very steep slope at an altitude of about 4,000 feet. .

The eastern side of the glacier is strewed with rock and sand for a breadth of from 300 to 600 feet. The spur of rock between the main stream and the Stevens Glacier gives rise to a very perfect medial moraine, about one third the glacier's width from its western edge. A high bluff of lava just below the junction of the Stevens furnishes material for a heavy lateral moraine on the western side also, leaving but a narrow strip of clear ice between it and the medial. The medial moraine in the upper reaches of the glacier is a mere train of débris on the surface. Lower down it forms a ridge, and about a thousand feet back from the snout this ridge is over eighty feet high. Nowhere, however, does the skin of débris average more than six inches to a foot in thickness, the core of the ridge being clear ice, which is protected from more rapid melting by the covering.

The motion of the glacier was measured accurately at a point about 3,000 feet from the snout. Here the surface was smooth and free from crevasses, and the sides of the stream almost parallel. A white stake about two inches square was set in a pile of rocks on top of one of the ancient border moraines on the east side, 300 feet from the eastern edge of the glacier, and about fifty feet above its surface. This will for convenience be called the East Base. A second stake, the West Base, was set on the opposite bank on a ledge of granite about the same height above the surface. These stakes were intervisible, and the distance between them as determined by triangulation was 1,944 feet. A transit-instrument was set over the East Base, sighted on the western one, and a line run across the glacier.

The usual method of observing the motion of a glacier is to measure the movement of rods placed in holes bored in the ice. In the present instance, owing to inexperience, and to the difficulty of transportation, the auger used for boring the holes was but fourteen inches long, and it was found that a wooden rod placed in so shallow a hole was almost certain to fall over in the course of a day, on account of the rapid melting at the point of contact between the rod and the ice. As a consequence no rods were placed in the holes at all, but these latter



VIEW ACROSS NISQUALLY GLACIER, FROM THE EAST BASE.

From photograph by J. N. Le Conte.

were left open, their positions being identified by small piles of stones a few feet down-stream. Their size increased slightly in the course of two days, but the circular form was perfectly preserved, enabling a measurement to be made to the center of a hole with an accuracy of two or three tenths of an inch. They were rebored every two days.

The locations of the various holes with relation to one another and to the edges of the glacier are as follows:—

Eastern edge	to	No.	1 200	feet
No. I	66	No.	2 205	66
No. 2	66	No.	3 153	66
No. 3	68	No.	4 105	46
No. 4	66	No.	5 147	44
No. 5	66	No.	6 163	44
			7 50	05
			8 206	46
No. 8	46	No.	9 179	68
			tern edge 75	66

Figure A is a plan on this line, and Figure B a profile. The distances were measured with a hundred-foot steel tape. Hole No. I was in the middle of the west lateral moraine, which is here 400 feet wide. Nos. 2, 3, 4, and 5 were in the clean white ice of the main stream, No. 6 in the top of the medial moraine, and No. 7 a short distance west of it, but this hole was lost soon after the measurements were begun. No. 8 was in the narrow strip of clear ice west of the medial, and No. 9 near the edge of the western lateral moraine. The positions of these holes may not be the best, but they were in general necessary for clear seeing from the transit stations. Holes Nos. 1-6 were observed from the East Base, and the others from the West Base. The base-line was not exactly at right angles to the axis of the glacier, which is assumed to be parallel to the sides; the sides having a very gentle curvature for a mile above the section measured. But measurements were made at right angles to the base-line as selected, and a very slight correction was made to obtain the true velocity. The slope of the surface of the ice midway between holes 3 and 4 was eleven degrees, and the distance from the line to the snout was 2,950 feet. The results are collected in the table, and are shown graphically in the figures. All measurements were made about 10 A. M., and the daily motions are for twenty-four hours.

MOTION OF THE ICE OF NISQUALLY GLACIER, JULY, 1906.

		DAILY M	DISTANCES OF HOLES IN PERT				
HOLES	July 18th July 20th	July 28th to July 22d	July 22d to July 26th	July 26th	July 18th to July 28th	From east From we edge edge	
1	11.3	17.8	10.1	9.4	11.8	200	
2	15.6	17.3(1)	14.9	12.7	15.1	405	
3	15.8	21.9	15.1	13.1	16.2	558	
4	15.0	22.4	14.2	13.3	15.8	663	
5	15.0	21.1	14.5	12.8	15.6	810	
6	15.0	21.7	13.6	12.5	15.2	973	510
7	15.0	19.0					460
8	12.4	15.7	10.2	10.4	11.8		254
9	6.8	7.9	5.0	5.7	6.1		75

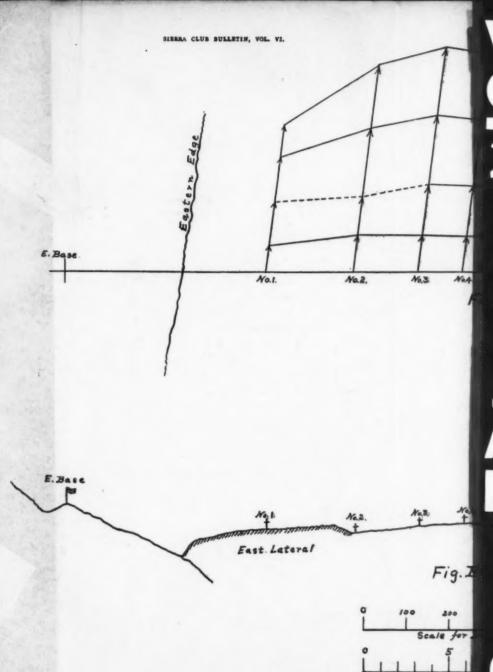
July 18-20-Weather fair but cool.

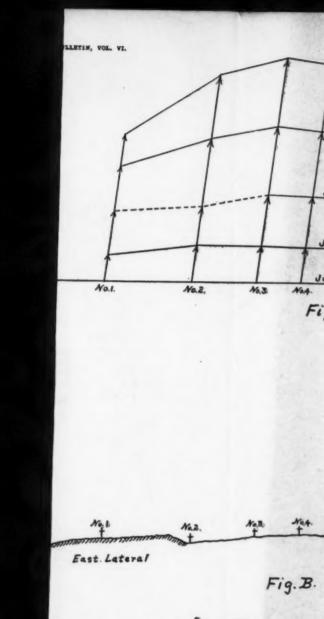
July 20-22-Weather warm, dry wind.

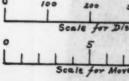
July 22-26-Weather fair, changing to cloudy.

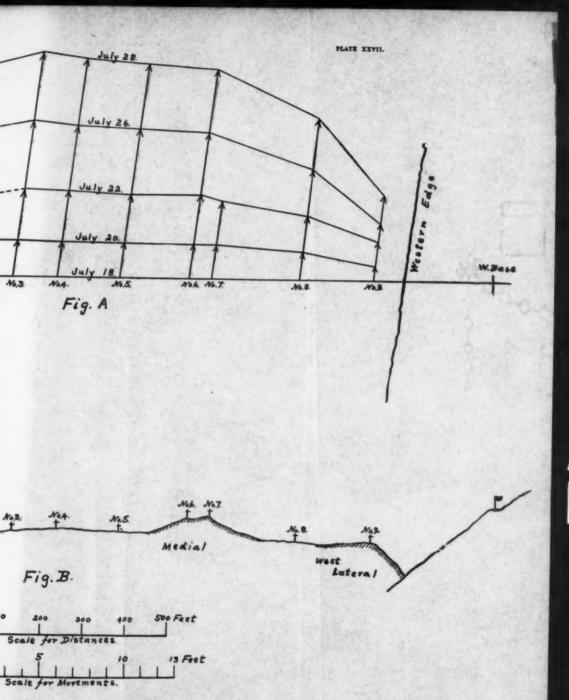
July 26-28-Weather cloudy, and raining.

The more rapid movement of the center is evident. It also appears that the eastern part of the section moved more rapidly than the western part, and that the point of maximum velocity is in the neighborhood of hole No. 3. This is due to the fact that the glacier is not perfectly straight, but is sweeping around a gentle curve with the convex side to the east. A marked variation of velocity occurs between the different periods, which seems to be caused by changes in the rate of melting due to changes









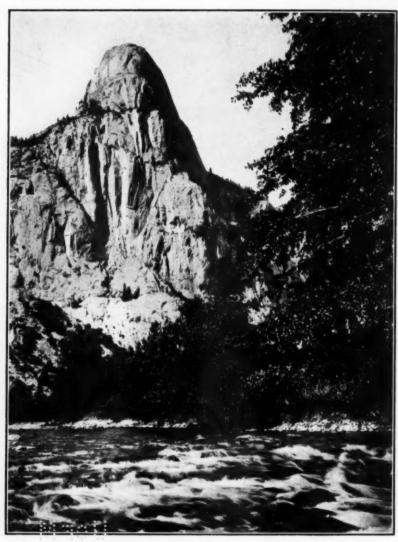
MERRY CLOS SULLTEN, SOL. VE. To Have in the weather. The weather had been cold and stormy previous to July 17th. On that day it cleared off, and a reconnaissance of the glacier was made. The holes were bored on the 18th, and between that date and the 20th, when the first measurement was made, the weather continued fine though cool. Professor A. G. McAdie, of the U. S. Weather Bureau, noted a mean temperature of 55° F. on the glacier during the day of the 18th, and the following day was a trifle warmer. The 20th and 21st were warm, clear days, with the temperature on the glacier averaging 70° to 75° F. at noon, and with a strong wind blowing from the north. From the 22d to the 26th, the days were cool and clear (about 60° F.), while from the 26th to the 28th the weather was stormy, with rain much of the time.

In order to ascertain whether or not the upper portions of the glacier moved at a more rapid rate, a sight was taken on July 22d on a large boulder in the middle of the glacier, and about a half-mile above the base-line. It was sighted again on the 28th, at the same time of day, and was found to have moved about nine feet. This gives a mean daily motion of about eighteen inches during the period, but the method is not susceptible of much accuracy.

A rough minimum measure of the amount of surface melting can be obtained from the changes in the depth of the holes. The depth of each was measured when first bored, and whenever deepened. The lateral melting was small, and it is probable also that the melting at the bottom was also small. As there was no freezing at any time during the observations, the surface melting could not have been less than the changes in the depth of the holes. These measurements were so irregular as to show no general law, except a distinct increase on the two hot days above mentioned. The mean rate of surface melting and evaporation thus obtained by twenty-eight measurements on all parts of the line was 4½ inches per day, which is probably not far from the true value.

On July 27th a monument was built on a granite ledge near the old trail between Paradise Park and Longmire's Springs, and directly opposite the glacier's snout. This monument was about ten feet to the left and above the trail. The bearing from this point to the end of the glacier was about N. 80° 30′ W., magnetic. The angle included between the end of the glacier and the right-hand edge of Gibraltar Rock was 70° 53′, and between the end of the glacier and the summit of Tumtum Mountain, 54° 00′. It is hoped that this will help future observers to determine something positive concerning the retreat of the glacier's snout.

The writer desires to express his thanks to Mr. James Hutchinson, and other members of the Sierra Club, without whose aid the measurements could not have been made. Also, to Professor Harry Fielding Reid for his kindness in suggesting methods of procedure, and in criticising the results.



TEHIPITE DOME, MIDDLE FORK OF KING'S RIVER. From photograph by J. N. Le Conte.

REPORT ON THE KING'S RIVER CANON AND VICINITY.

To the President of the United States. TO THE SECRETARY OF AGRICULTURE, AND TO THE FORESTER:

We beg to submit for your consideration the following report :-

This report has been inspired by the grandeur and magnificence of the scenery of the King's River Cañon and the adjacent region. This includes the Tehipite and Paradise valleys and the High Sierra, where the two main branches of the King's River-the South and Middle forks-and their tributaries rise. The Sierra Club has visited this region on two of its annual Outings-in 1002 and again in 1006. Because of its inaccessibility, comparatively little is known of this extensive mountain park which lies in the upper drainage basin of the King's River. At the present time the trip entails many miles of arduous stageriding and travel over rough mountain trails. However, the Legislature of California, in 1905, appropriated \$25,000 for building a road into the main cañon, provided Fresno County would appropriate \$12,500 for the same purpose. This has been done, and the work of surveying the line of this road is nearing completion. The road itself should be finished within the next year or two.

The object of this report is twofold. We wish to make this region better known and aid in attracting the attention of the traveling public to it. One of the main purposes of the Club is "to publish authentic information concerning" the Sierra. The other object of this report is "to enlist the support and cooperation of the people and the Government in preserving the forests and other natural features" of the Park and "render them accessible." If we attract the public eye to this wonderful region and induce the Government to assist in making it more accessible and in protecting it from threatened encroachments, we shall have accomplished all that could be desired.

KING'S RIVER CANON.

Probably the question oftenest asked of one who has visited the King's River Cañon is "How does it compare with Yosemite?" That it has Yosemite-like characteristics is certain. John Muir, in an article published in the Century Magazine for November, 1891, (Vol. XXI, page 78,) points out many of the striking resemblances. Professor Joseph Le Conte, in an article which appeared in Sunset for October, 1900, says: "There can be no doubt that King's River Canon belongs to the same type as Yosemite and Hetch Hetchy. They are all Yosemites,—i. e. valleys with vertical walls and flat floors, as contrasted with the usual V-shaped valleys of mountains generally. In King's River the walls are equally high and equally vertical, and the

floor similarly, although not equally, flat."

To compare these two wonderful valleys except in a most general way is as difficult as to compare two great epics, and after all the result would be most unsatisfying. To use Professor Joseph Le Conte's words, "Doubtless, for aggregation of striking features within a limited area, and especially for the splendor of its many waterfalls, Yosemite stands unrivaled, not only in California, but in the world. But there is a peculiar, though gentler, charm also in the foaming rapids so characteristic of King's River and its branches. If Yosemite is far superior in its falls, and also in its extensive meadows and the variety of its foliage, King's River cañon branches and rebranches, becoming deeper and wider and grander until it deploys and loses itself among the highest peaks and grandest scenery of the Sierra."

It is difficult to improve on this brief comparison. One has but to examine the "Yosemite" and "Tehipite" quadrangles (maps issued by the U. S. Geological Survey), in which the respective valleys lie, to appreciate the truth of Professor Le Conte's statement that it is in its surrounding mountain scenery that King's River Cañon is far superior to Yosemite and not in the features

of the immediate cañon itself.

The floor of Yosemite is about 4,000 feet in elevation, while that of King's River Cañon is about 4,500 feet. The divide immediately north of Yosemite, which separates the Merced drainage basin from that of the Tuolumne, is composed of rolling granite ridges, for the most part forest covered, and with insignificant points jutting out here and there, none of which much exceed 9,000 feet in altitude. On the other hand, the stupendous Monarch Divide, which towers to the north of the King's River Cañon and shuts it off from the Middle Fork and Tehipite Valley, rises far above the timber-line in a jagged crest varying from 11,000 to 11,500 feet in height, and culminates in Goat Mountain, whose summit is 12,203 feet above sea-level, or more than 7,500 feet above the floor of the cañon. Directly to the south of Yosemite the highest points on the divide do not rise much above 9,000

feet, while there are many points on the corresponding divide south of the King's River Cañon which are over 11,000 feet high. Avalanche Peak is 11,265 feet in altitude, and is but two miles distant from the cañon walls. We have gone thus into detail to indicate to even the casual observer the tremendous advantage the region surrounding King's River Cañon possesses over the similarly situated Yosemite region by reason of the greater depths and heights of the former and its consequent wealth and variety of mountain sculpture.

The King's River Cañon has no falls that compare in grandeur with the Yosemite, Nevada, Vernal, and Bridal Veil of Yosemite Valley, nor any gigantic rock forms that are as wonderful as Half Dome or El Capitan. However, the cliffs of the Grand Sentinel in King's River Cañon compare favorably with anything else in Yosemite, and the Roaring River Falls and Mist Falls of the cañon will not suffer by comparison with any falls in California outside of Yosemite, and are unique, possessing a rare picturesqueness and local color of their own. Mist Falls in particular are as remarkable an exhibition of dashing spray, leaping foam, and driving mist as can be found anywhere.

In short, Yosemite and the King's River Cañon are both tremendous valleys sunk in the middle of the including drainage basins of each; but while the Yosemite is by far the more wonderful valley, the surrounding mountain-peaks which guard the King's River Cañon to the north and south tower in imposing masses almost 2,000 feet higher above its floor than do the corresponding and less impressive points which delimit the Yosemite drainage basin.

PARADISE VALLEY.

Proceeding up the South Fork, or Paradise branch, of the King's River, which turns at almost a right angle at the head of the main cañon, we pass several beautiful falls, including Mist Falls, and after a lively scramble over talus from the inclosing cliffs, and through brush, the lower end of Paradise Valley is reached in the short space of three miles. This valley in many respects bears a similar relation to the King's River Cañon that the valley of the Little Yosemite does to the main Yosemite. It is about three miles in length, having rather a narrow floor, carpeted with several charming velvety meadows through which winds the crystal river, forming at every turn emerald pools that make the fisherman's heart beat with thought of the trout that might lurk in their depths. Beautiful groups of fir and pine are scattered throughout. The walls of this valley are Yosemite-like and are flanked on the west by Goat Mountain

and on the east by Mts. King and Gardiner, each nearly 13,000 feet in altitude. Over these walls several streams tumble in fantastic lace-like cascades.

At the extreme head of the valley a rocky knoll juts out from the westerly wall. From its summit is a view that for comprehensiveness and grandeur it would be difficult to duplicate. It stands at the junction of three immense cañons—the Paradise Valley, the Paradise Gorge, and Wood's Cañon. Immediately opposite tower the castellated cliffs of the Muro Blanco, over which pours Arrow Creek in zigzag cascades of foaming water and iridescent spray. The sources of the Paradise River are in an almost unknown and inaccessible region of lakes, meadows, and towering peaks.

THE BASIN OF WOOD'S CREEK.

Leaving Paradise Valley and following up Wood's Creek past Castle Domes, one finds that its various branches rise amid a bewildering maze of lakes. One of the branches of the South Fork of this creek heads in Sixty Lake Basin while the South Fork itself flows through a succession of the most exquisite bodies of water of the richest and deepest sapphire imaginable. The uppermost of these is Rae Lake, over a mile in length, and situated in an amphitheater of encircling peaks which range from 12,000 to 13,000 feet in height. Fin Dome, Mt. Rixford, Black Mountain, and Diamond Peak seem almost to overhang the lake with their gigantic bulk; their dark, threatening cliffs, streaked with snow and mirrored in the lake at their base, make a picture as sublime as any to be found in the whole Sierra.

THE BASIN OF BUBB'S CREEK.

Crossing Glenn Pass (12,000 ft.) with the trail in its present condition is not an easy task, but it can be made passable without great expense, and to enter in this way the Basin of Bubb's Creek and its tributaries is well worth the effort. The trail drops down to Lake Charlotte and thence over a low divide to Bullfrog Lake, where it branches, and one may cross the main crest of the Sierra at the famous Kearsarge Pass and descend to Independence. The scene from the vicinity of Bullfrog is of wildest grandeur. University and Stanford peaks, Crag Ericson, Mt. Brewer, and nameless others, rise to a height of nearly 14,000 feet, and East Lake and Lake Reflection are not far from the trail down Bubb's Creek Cañon, which brings one back into the main King's River Cañon.

It is no exaggeration to state that the scenery which one finds on the round trip just described is as wonderful as exists any-



PARADISE VALLEY, LOOKING UP TOWARD MURO BLANCO AND ARROW CREEK FALLS. From photograph by J. N. Le Conte.

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where within the same limits, and we predict that this trip is destined to become one of the most famous in the entire Sierra.

ROARING RIVER BASIN.

The Roaring River Basin, which tumbles its waters over the falls into the King's River Cañon, is inaccessible from this direction, but can be readily entered from the west. One can easily spend a delightful summer in this basin, visiting its meadows, falls, lakes, cañons, and peaks, and Mt. Brewer, from the summit of which one of the most comprehensive views of the High Sierra can be obtained, is quite accessible from this side.*

THE MIDDLE FORK OF KING'S RIVER.

The major portion of the basin of King's River north of the Monarch Divide is drained by the Middle Fork and its tributaries. This stream is very nearly the same size as the South Fork, and the region through which it passes is the wildest, most magnificent, and difficult of access of any portion of the Sierra. The main cañon of the Middle Fork is about twenty miles in length. Near its upper end is the beautiful Simpson Meadow, the garden-spot of the southern Sierra. Twelve miles below this is the Tehipite Valley, the Yosemite of the Middle Fork. Here the stream has cut a cañon nearly 4,000 feet deep, with splendid clear granite cliffs. The Tehipite Dome on the north wall is the finest rock face to be found in the Sierra outside of the Yosemite Valley itself. It ranks second to El Capitan and Half Dome alone, and in many respects is not their inferior. It rises as a clean-cut, absolutely vertical precipice, 3,700 feet from the river to the top of the perfect hemispherical cap. The cañon between this valley and Simpson Meadow is fine throughout its entire extent, and it would be largely frequented by tourists were it not for the roughness of the trails.

THE HIGH SIERRA OF THE KING'S RIVER REGION.

The Middle Fork heads in a vast quadrilateral area between the Main Crest and the Goddard and Woodworth divides, all of which ranges are practically impassable to pack-animals. Through the middle of this it has cut a profound canon from its fountainhead near Grouse Valley to its lower reaches near Simpson Meadow. This cañon is now entirely impassable to pack-animals. The mountains about the head of the river are among the highest in the State. Mt. Goddard (13,602 ft.) and

^{*}See Stewart Edward White's recent book, entitled "The Pass," which describes this region.

the grand array of the Palisades, which average from 13,700 to 14,200 feet, are the finest. The southern extremity of this latter range terminates at Split Mountain (14,076 ft.) near the point where the Monarch Divide joins the Main Crest. South of this is the great wilderness of the South Fork, where the peaks are scarcely inferior in height to those of the Middle Fork. The stream rises in an extremely elevated basin near the base of the South Palisades, and finally falls into a beautifully timbered valley to the north of Arrow Peak. From this it breaks through a deep gorge to pour into the upper end of Paradise Valley. The mountains in this region have been but little explored, owing to its inaccessibility. South of Mt. Pinchot (13,471 ft.) the drainage is tributary to Wood's Creek, and the region is somewhat easier of access on account of the old sawmill trail which follows up its gorge. South of Wood's Creek is Bubb's Creek, whose remarkable scenic features have already been touched upon.

ROUTES OF TRAVEL.

Sanger-Millwood Route.-This is the route most generally traveled for reaching the cañon. The Southern Pacific Railroad takes one (via Fresno) to Sanger. From this point the King's River Stage Company (R. H. Gallagher, manager) runs a stage line to Millwood, forty-five miles distant. Millwood is a lumber camp situated at an elevation of about 5,000 feet, where there is a small general merchandise store. P. A. Kanawyer runs a pack-train from Millwood into the King's River Cañon, which is about thirty-five miles distant by either the upper or lower trail. Mr. Kanawyer will provide parties with pack-animals and outfit, and one may board at his camp in the caffon during the summer months. On the way to the cañon and but a little over a mile from Millwood is the famous General Grant National Park, containing a fine grove of sequoia, or big trees. The General Grant is one of the most perfect and largest specimens living. The lumber-mill in this vicinity is well worth visiting. It handles the largest logs in the world, some of them being over twenty feet in diameter. However, it is heart-rending to see these monarchs of the forest, which have stood for millenniums, cut down in their prime.

Visalia-Giant Forest Route.—Another way to reach the cañon is to leave the railroad at Visalia, take an electric line to Lemon Cove, and thence travel in Broder & Hopping's stage to the Giant Forest. Broder & Hopping maintain a camp at the latter point, and will outfit parties desiring to visit the cañon. The Giant Forest and vicinity is a wonderful region, but it will not be described here, since it is the intention of the Club to in-



SIMPSON'S MEADOWS, MIDDLE FORK OF KING'S RIVER.
From photograph by J. N. Le Conte.

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corporate a description of it in a report on the Kern River Cañon, which will be issued in some future year.

Visalia-Big Meadows Route.—There is a road, also leading from Visalia, which takes one into the Big Meadows, but the upper end of this road is not in the best of repair, and there is no stage-line operating on it. Big Meadows is only ten or twelve miles by trail from the King's River Cañon, and though travel by trail is so materially shortened, this route is seldom used.

Independence-Kearsarge Route.—The King's River Cañon can also be reached by trail via Independence and Kearsarge Pass (nearly 12,000 feet in elevation); but this pass can seldom be crossed earlier than July on account of the snow.

THE STATE ROAD.

Most of the routes by trail will be abandoned upon completion of the new road into the cañon. This will follow the general route of the Lower trail from Millwood via General Grant Park and Long Meadow until it crosses Ten-Mile Creek. From this point it will descend to the main King's River, which it will cross by bridge just below the mouth of Boulder Creek. It will then follow up the north side of the river, keeping near it until it reaches the King's River Cañon proper.

The Chairman of this committee recently had a conversation with Mr. Ellery, State Highway Commissioner, who has charge of the construction of this road, and Mr. Ellery stated that the survey was nearly complete, and that the actual construction of the road would be commenced early in 1907, and would probably be complete some time in 1908. Mr. Ellery was very enthusiastic over the route selected, stating that the scenery in the main gorge of the King's River in the vicinity of the proposed bridge below the mouth of Boulder Creek was as magnificent as any he had ever seen. Limestone cliffs of dazzling whiteness descend sheer into the river, while the tremendous cañon and foaming rapids of the river itself will make this mountain route famous for its picturesque beauty. When completed, this road will open up and make accessible to the traveling public all the wonderful scenic features of this wild mountain park.

THE POREST SERVICE.

The entire region which has been described in this report is embraced in the Sierra Forest Reserve. The public is to be congratulated that this region has for these many years been under the wise protection of the forest reserve system, which has been brought to its present standard of excellence through the able management of Mr. Gifford Pinchot. The bands of sheep which once rendered desolate and barren the beautiful mountain meadows and valleys have long since been excluded, and the flower-gardens and lawns of the High Sierra are again flourishing in their pristine beauty. Mr. Charles H. Shinn, Forest Supervisor, and, under him, Mr. McLeod, Head Ranger of the King's River region, and his assistant rangers, are doing most excellent work along the lines of duty laid down by the forest service. Mr. Shinn especially has grasped the spirit of the reserve, and is doing splendid work in harmonizing the various interests which exist within the reserve.

FOREST RESERVE OR NATIONAL PARK?

While we, as members of the Sierra Club, which aided in the establishment of the forest reserves, appreciate to the fullest extent their great value, yet we feel that this entire region embraced in the upper drainage basin of the South and Middle forks of the King's River, or at least the greater portion of it, should be placed on the same basis as other lands which are embraced within National parks. Whether it should be made a National park in name or whether it should remain a part of the Sierra forest reserve is not vital. The desired results can just as well be obtained, for the present at least, under the efficient supervision of the present forest reserve management.

The only question which can possibly arise in this connection is as to whether the present forest reserve system is intended to provide for the situation which confronts us in relation to the King's River Park. As we understand the reasons for the establishment of the forest reserves, they are to aid in conserving the forests and water and grazing areas of the lands which they include, and to supervise their use, having in view the best interests of the public at large. As we understand it, the reserves have been established for utilitarian purposes only, and in order that the timber may be cut and the water used for power and the grazing land be pastured to the best possible economic advantage. In other words, their object is primarily commercial in its nature.

On the other hand, we feel that in the case of most of the area described in this report the commercial element should be eliminated almost entirely if not absolutely. The scenery of the region described is by far too wonderful and sublime to permit of the destruction or alteration of any of its component parts. No portion of the forests should be cut for lumbering purposes, and in fact most of it is too inaccessible to be commercially valuable; the beautiful falls should not be despoiled

for power purposes, nor should the limited grazing area be used by others than the campers and travelers who journey thither to view the natural wonders of the park. In this limited region the æsthetic and scenic features are of paramount importance. Their commercial value even, in attracting the countless numbers who some day will visit this scenic area, will outweigh all other considerations. This area should be permanently set aside "for public use, resort, and recreation." The wild animals within its borders should also be preserved as they are in National parks. Whether all this can be accomplished under the existing forest reserve laws and regulations, and sufficient protection afforded, is a question the determination of which can best be left to the officials directly concerned. In view of the fact that it seems highly probable that the management and care of the National parks will be transferred to the Department of Agriculture in the near future, this question may readily solve itself.

We do not wish to be misunderstood and to arouse unnecessary opposition on the part of private owners, who might get a false idea of just what we wish to accomplish and who might imagine that we were attempting to impair their rights. At the present time we have in mind the creation of a park area which shall not extend much farther west than the lower end of the "King's River Cañon" and of the Tehipite Valley, and which shall embrace the major portion of the drainage basin of both the Middle and South forks of the King's River to the east of

these points.

RECOMMENDATIONS.

Aside from our main recommendation that this region be set aside as a park area, there are several minor suggestions which we most respectfully present to the Forest Service and request that favorable action be taken thereon and that the suggestions be carried out in the near future. It is most desirable that this should be done before the State road has been completed.

1. We consider of utmost importance the construction of a trail leading from the King's River Canon up to Paradise Valley, following along the north side of the river. By constructing this trail of some three miles in length, the necessity of a detour of nearly ten miles and a climb of nearly 4,000 feet will be obviated. While portions of this trail will be expensive to construct, it is very short, and the difficult sections constitute only a small part of the entire length. It will open up a most wonderful region, and its importance cannot be too greatly emphasized. A bridge should also be constructed in Paradise Valley over the main river a short distance above the mouth of Wood's Creek.

- 2. We recommend the construction of a permanent bridge over the main King's River in the vicinity of Cedar Grove, to replace the one which was carried away by the high water of 1906. We are informed that such a bridge is in the course of construction.
- 3. The construction of a permanent bridge over the King's River just above the mouth of Bubb's Creek is eminently desirable. It is the logical point for the construction of a bridge, and will obviate the necessity of fording Bubb's Creek and will greatly improve the trip to Kearsarge Pass.

4. It is desirable that a bridge across the main river be placed near where the old bridge formerly crossed, just opposite Kanawyer's cabin. This bridge is necessary in order to make

the Grand Sentinel accessible.

- 5. A direct trail from the King's River Cañon to Mt. Whitney should be built. The highest mountain in the United States is so attractive that many wish to visit it from this region, and this trail will serve the double purpose of making the Kern Cañon accessible as well. It has been suggested that such a trail should be made up the gully to the east of the Grand Sentinel, and after crossing the high region directly to the south of the King's River Cañon, most of which is open country, the trail should then drop into Cloudy Cañon and join the trail leading up to the head-waters of this cañon, and, after crossing the divide, drop down the cañon of either the Kern-Kaweah or the Big Arroyo (whichever might be found most feasible) and join the present Mt. Whitney trail in the Kern Cañon not far from where it ascends the eastern wall.
- 6. In order to render the Tehipite Valley accessible, it is recommended that prior to the completion of the State road a trail be constructed from the point on the north side of the King's River where the road crosses the river and thence down the north side of the river till it reaches the point of junction of the Middle and South forks, and thence up the south side of the Middle Fork until it reaches the Tehipite Valley. A bridge should be constructed over the Middle Fork in Tehipite Valley. We are informed that the greater portion of this trail is already in existence, and that the portion toward Tehipite only will have to be built. Another bridge should ultimately be placed across the Middle Fork between Tehipite Valley and Simpson's Meadow.
- 7. In view of the fact that Mr. Shinn informs us that he has persistent applications for permits to pasture stock in Paradise Valley, we desire to place ourselves on record as unalterably opposed to the granting of any such permits. The time is not

far distant when the idea of pasturing cattle in Paradise Valley will be as unthought of as it would be now to have them pastured in Central Park.

8. Since the amount of trail work and construction of new trails necessary to properly open up and render accessible this wonderful region is so great, we would recommend for the most careful consideration of the Forest Service the establishment of a permanent crew of trail-makers who should have the work of constructing and repairing trails and building bridges as their sole duty, and to be called out to fight fire only in case of extreme necessity.

In making the foregoing recommendations, we feel that for the greater part they are improvements directly in line with the proper development of the forest reserve, and will all tend to make the reserve itself more accessible and more easily patrolled. Respectfully submitted.

> WM. E. COLBY, Chairman, J. N. LE CONTE, E. T. PARSONS, Outing Committee.

Published by order of Board of Directors of the Sierra Club.

[Note.—Mr. John Muir has read the foregoing report, and, with the exception noted, it meets with his "hearty approval." He further states that "every possible aid and encouragement should be given by the Club for the preservation, road and trail building, etc., for the development of the magnificent King's River region." He does not approve of that portion of the report, however, "in which the Yosemite and King's River regions are compared," thinking that the comparison is somewhat "unjust" and "one-sided." The report was already in press, or it would have been modified in this particular, and this note has been inserted so that Mr. Muir's views on the subject should not be misrepresented by an unqualified indorsement.]

Northfork, Madera County, December 28, 1906. Secretary Sierra Club, San Francisco.

Dear Sir: I have been asked for some notes on the King's River region, from the standpoint of the Forest Service, or rather from that of the local officers.

We are entirely in sympathy with the Sierra Club in every effort to make the mountains more accessible and to preserve the natural beauties of our scenery. The region reported upon by the Club is mainly so precipitous and so devoid of timber or large grazing areas that it can easily be handled as a strictly tourist region.

The Forest Service does not propose to allow the grazing of sheep in the great area between the Middle Fork and South Fork of King's River. Cattle have already been excluded from Roaring River and Cloudy Cañon, also from Bubb's Creek to the summit. In fact, the only live-stock at present using meadows in this region are pack-trains and saddle-horses.

It is fortunate, I think, that the leaders of the new American forest movement are men of broad culture as well as of business training. In Washington, as well as here in the Sierra Reserve, there has never been any difference of opinion respecting the

fundamental principles of reserve management.

Briefly, we aim at a wise and careful balancing of closely related interests. The reserves must be made self-supporting; the forests must be maintained, improved in quality, increased in area; the multitude of local industries, such as grazing, which were established before the reserves, must be considered. All these taken together make up the commercial side of reserve work, and secure the livelihood of thousands of American citizens. Any reckless or too sentimental interference with this side of reserve work by well-meaning lovers of outdoor life would result in an upheaval which in the end would go far towards ruining not only the reserve system but the National park system.

But over and beyond all the commercial interests involved, foresters and the reserve leaders recognize our full responsibility as guardians of the High Sierra. It is our duty as well as our happiness to keep inviolate for all time to come, as far as the many interests involved will permit, the real mountain land where the tired people of great cities and throbbing valleys can

come and find rest.

There is ample room in the reserves for the fostering of every possible interest involved. There are broad acres which distinctly belong to tourists, campers, and friends of the wilderness. To the reasonable withdrawal of such areas from grazing, the stockmen make no objections,—the meadows are too small and the mountains too rough and too distant for profitable use. As the number of tourists increases, the areas which they need will enlarge. The building of hotels, cabins, etc., will in time use much of the scattered timber which is unprofitable from the commercial standpoint. The tourist travel itself will in time yield a sufficient income to construct the necessary roads and trails and bridges. It will be proper to charge for licenses to take in pack-trains, to run hotels, and to shoot game.

Every now and then the view is expressed in print that the reserves are likely to be run more and more for merely commercial reasons. On the contrary, as I wish to point out, the reserves are able to develop a large income from timber and grazing resources, and therefore are especially well fitted to maintain and improve suitable tourist areas in wild regions unfit for commerce. In looking at these things, we must utilize the trained imagination so as to understand what fifty years of growth will do for the Sierra.

A park within a reserve would virtually be a case of divided authority, and it is not seriously proposed by any one. The whole reserve idea is based on the preservation of natural beauties, as well as on the wise development of commercial enter-

It seems to me especially desirable to have all the tourist elements brought closer together, allotted local areas, and made more definitely responsible for the results. I do not now refer to the thousands of campers and cottagers who more and more gather each summer in the timber belt or about cattle camps or near sawmills, or here and there by little meadows. These people come from the valley, and really become a part of the daily life of the reserve, sometimes for many months. But the country that Stewart Edward White writes of in "The Pass," that Muir, Le Conte, and all the rest of your Club have climbed over, can be made to belong to those whose vacations are brief and whose organization is of a higher type. It will be a sad day for the Sierra Forest Reserve if its officers ever lose the good will and hearty co-operation which the Sierra Club and kindred bodies have ever given.

Very sincerely,

CHARLES H. SHINN, Supervisor Sierra (N) Reserve.

SIERRA CLUB BULLETIN.

PUBLISHED JANUARY AND JUNE OF EACH YEAR.

Published for Members.

Annual Dues, \$3.00.

The purposes of the Club are:—"To explore, enjoy, and render accessible the mountain regions of the Pacific Coast: to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains."

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Librarian-Miss Anita Gompertz.

REPORTS.

REPORT OF THE CUSTODIAN OF LE CONTE MEMORIAL LODGE, YOSEMITE VALLEY.

During the summer of 1906 the Le Conte Memorial Lodge was open to the public from May 22d till July 22d. It was not until June 15th, however, that visitors to the valley were numerous enough to enjoy the hospitality of the lodge even in moderate numbers.

There were two reasons why people did not go to the valley during early summer. The principal one, of course, being the earthquake, and also the unusually long and wet spring.

Not until June 14th was Glacier Point trail opened, and Eagle Peak was not accessible until a week later. Snow clung to the rim of the valley until July 1st, and it was not possible even to reach Lake Tenaya, except on foot over frozen snow, on August 1st.

The lodge was open daily, except Sunday, from 9 A.M. till 9: 30 P.M., and during the greater part of the season a cheerful fire blazed in the Titan fireplace every evening.

The custodian was ably assisted by his wife in entertaining guests, and the promotion of the Sierra Club and its aims were sought rather than the mere conducting of a library. To that end personally conducted trips were taken every Sunday, and frequent visits made to parts of the wonderful valley that few people visit. Evenings of entertainment around the blazing fireplace, with pop-corn and lemonade, often enticed a number of visitors.

During the latter part of the summer the number of visitors increased greatly, and at the time of closing there were many more people in the valley than had been during the months of May and June. The closing of the lodge was a cause of general regret.

With the advent of the new railroad, Government control of the valley, and the consequent rise of importance as a pleasure resort, it will not be extravagant to improve the interior furnishings of the lodge by installing new furniture in keeping with the structure; by adding to the selection of books and magazines; by piping fresh water to satisfy the frequent requests of visitors; by furnishing a supply of firewood for the earlier months of summer; and by lengthening the season to four months.

The thanks of the Sierra Club are due Mr. F. O. Popenoe, of Los Angeles, for a year's subscription to the *Pacific Monthly;* to Mrs. John Sexton, of Santa Barbara, for a supply of current magazines; and to Miss Hope Loughborough, of Little Rock, Arkansas, for a copy of "The Mountains," by Stewart Edward White.

Respectfully submitted,

J. J. RHEA, Custodian.

NOTES AND CORRESPONDENCE.

In addition to longer articles suitable for the body of the magasine, the editor would be glad to receive brief memoranda of all noteworthy trips or explorations, together with brief comment and suggestion on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, forests, trails, geology, botany, etc., of the mountains, will be acceptable.

The office of the Sier-a Club is at 2501 Channing Way, Berkeley, where all the maps, photographs, and other records of the Club are hept, and

where members are welcome at any time.

The Club would like to secure additional copies of those numbers of the Sirra Club Bullatin which are noted on the back of the cover of this number as being out of print, and we hope any member having extra copies will send them to the Secretary.

> Scottish Mountaineering Club, 20 George St., Edinburgh, May 31, 1906.

SECRETARY SIERRA CLUB, San Francisco.

Dear Sir: Your circular of 10th received. May I offer you the sincere sympathy of the S. M. C. in the loss of your records, books, etc., and express the hope that the trouble you are experiencing will soon be in the past?

If your copies of the S. M. C. Journal have been destroyed, can we show our sympathy in a practical way by sending you copies of those issues we have still in print?

Kindly say, and mention what numbers you had, if possible.

Yours very truly,

W. E. COLBY, Esq.

F. S. Goggs, Honorary Librarian.

LONDON, May 29, 1906.

SECRETARY SIERRA CLUB, San Francisco.

Dear Sir: I have returned to town for a few days, before leaving for the Continent, and find your Circular No. 31 amongst my letters.

I hasten to assure you of my entire sympathy. The Club has been tried by fire, but it will, I hope and believe, emerge from the ordeal stronger than before.

If I can, by sending out copies of my own books, or can in any other way assist in the restoration of your library, you have only to command me.

nand me. Very truly yours,

W. E. COLBY, Eso.

EDWARD WHYMPER.

PORTLAND, OREGON, May 23, 1906.

TO MEMBERS OF THE SIERRA CLUB, GREETING:

Mazamas have heard with profound regret of the awful calamity that has been visited upon our sister city San Francisco, and our hearts go forth in deep and enduring sympathy to residents of that glorious monument of human progress, the great city by the Western sea, but deeper by far does our sympathy go to those of kindred thoughts and impulses, lovers of the beautiful and grand in Nature, to whom a more tender tie binds our hearts, and the Executive Council has instructed me to convey to you that which words cannot convey, hence, I can only add:—

Down deep in our hearts there lingers a tenderness of sympathy and love for the Sierra Club that can meet a response only in hearts oft overflowing with mountains' sacred influences, so we expect you to catch from us that spark of sympathy inspired that will break forth within you a responsive flame of appreciation. Your printed records are gone and cannot be replaced, but your heart's work will go on forever. The seeds you have sown will spring up and bear fruit a thousandfold, and the world will be better for you. You will rise from the ashes of your city a greater organization, a greater power for good than you ever would have been without the scourge of fire.

If by word or by deed the Mazamas can aid you, it will be a rare privilege, and we will appreciate the opportunity and exert ourselves to rise to the occasion and prove ourselves worthy to serve you.

Very sincerely,

WILL G. STEEL, Cor. Sec. Mazamas.

New York, May 28, 1906.

SECRETARY SIERRA CLUB, San Francisco.

Deat Sir: All friends of mountaineering are deploring your recent club losses. Later I may send you a few books towards a new club library. Here is a check for \$50, as my dues to become a life member. Much is expected from the present spirit of San Francisco. We look for a Sierra Club, revived and invigorated, overcoming its difficulties with the climber's patient tenacity. May you soon emerge from these present misfortunes, with added numbers, and still higher mountaineering spirit!

The hopes and good wishes from the East are with you.

Sincerely,

W. E. COLBY, Esq.

HARRINGTON PUTNAM.

APPALACHIAN MOUNTAIN CLUB, Boston, Mass., April 27, 1906.

SECRETARY SIERRA CLUB, Berkeley, Cal.

Dear Sir: Your letter of recent date stating that your records had all been lost in the awful earthquake and fire in San Francisco, and giving your temporary address, was duly received.

My first impulse on learning of the calamity which overtook your great city was to wire you at once our sympathy and eagerness to assist in every possible way. But when I found that telegrams were being held up in Chicago by the thousands, it seemed best to wait until we could learn your home address, which I believed to be outside of the city.

At a meeting of this Club, held in Boston on the evening of April 24th, it was voted:—

"That a special committee be and is hereby appointed, to consist of Professor Charles E. Fay, chairman, the president, Mrs. Lucinda W. Prince, Mr. J. H. Emerton, and Mr. W. A. Brooks, to extend at once the sympathy of this Club to the Sierra Club of San Francisco in the terrible calamity which has befallen their city and their Club, and to consider what, if anything, the Appalachian Mountain Club can do to assist the Sierra Club, and report recommendations to the Council."

That committee met to-day and voted that the president should at once wire you of our interest, and follow the telegram with this letter.

Accordingly I have wired you to-day at the above address as follows: "Appalachian Club sends sympathy and desires to help Sierra Club. Letter follows."

As individuals we have all been doing what we can for the stricken city and its people as a whole. As a Club we desire to aid our Sierra Club brethren in every possible way to re-establish themselves.

We beg that you will inform us exactly as to your Club's situation, and suggest to us in what manner we can best aid you.

We will of course replace the full set of our magazine if you desire it, and can perhaps otherwise aid in restoring your library. Is there anything else that we can do?

It had been feared that your summer trip into the mountains would have to be abandoned, and we are overjoyed to note that you state in your letter that the plans will be carried out in the main.

It was learned here to-day that the educational convention for the summer had been practically abandoned, and that the railroads were intending to cancel the attendant reduced rates. This, I regret to state, will doubtless have its effect upon the size of the delegation that this Club might otherwise send to join you on your expedition.

All success to San Francisco and to the Sierra Club is our hearty wish. Your indomitable courage amid such great adversity commands our highest admiration. We are all Californians as we are all Americans, and we will build together a fairer San Francisco upon the ruins.

Fraternally yours,

W. E. COLBY, Esq.

ALLEN CHAMBERLAIN, President.

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Office of The Forester, Washington, May 24, 1906.

SECRETARY SIERRA CLUB, San Francisco.

Dear Sir: Many thanks for your letter of May 19th. I appreciate most heartily your kind and repeated invitations to take part in the Outings of the Sierra Club. This summer I had counted on going with you to the King's River Cañon, but now it seems unlikely that I shall have that pleasure. Important legislation in which the Forest Service is directly interested is pending in Congress, so that it will be necessary for me to be here during the closing days of the session, and I am afraid that adjournment will come too late for me to get out to California in time for the Outing. I wish most heartily I could come and I am exceedingly sorry that the chances are against it.

Let me thank you also for what you are good enough to say about the Yosemite Recession Bill. I hope strongly that it may pass.

We are all feeling very enthusiastic about the admirable spirit in which the San Francisco people are trying to recover from the results of the earthquake. I need not say that if there is any way in which the Forest Service can help I shall be particularly glad.

Very sincerely yours,

GIFFORD PINCHOT, Forester.

BOOK REVIEWS.

EDITED BY WILLIAM FREDERIC BADE.

"Western Tibet
AND THE British
BORDERLAND."

The attention of mountaineers with money and leisure is increasingly turning to Tibet.
Until recently no Europeans except a few Moravian missionaries had entered this for-

bidden country. Even these had not penetrated far beyond the border. But during the last decade Great Britain has been more aggressive in the assertion of her suzerain rights along the western frontier of Tibet, even going to the length of sending a military embassy to the capital. It is not surprising, therefore, that the best recent literature on Tibet should have been produced by Englishmen with an exploring turn of mind. Notable from every point of view is a book * that has just come to the reviewer's table from the press of Edward Arnold (London), publisher to the India office. Its title, Western Tibet and the British Borderland, sufficiently describes the scope of the work. As Deputy Commissioner of Almora, the author, Charles A. Sherring, evidently made good every facility for exploration. One hundred and seventy-five photographs of uncommon excellence illustrate the text. One chapter, written by T. G. Longstaff, a member of the Alpine Club, describes an attempt to climb Gurla Mandhata (altitude 25,350 ft.). This account will be of particular interest to members of the Sierra Club. Mr. Longstaff was accompanied by two Alpine guides from Courmayeur. Among the adventures of the trio was a fearful ride on a snow avalanche which carried them down a thousand feet and lodged them on a somewhat gentler slope. The following night they spent in a hole in the snow at an altitude of more than 23,000 feet. The writer considers their escape miraculous, and moralizes as follows: "I think we were to blame in having ventured to descend any steep Himalayan snow-slope after the sun had been on it all day, especially as most slopes in these mountains are really steeper than they look. In the Alps the reverse is usually the case, while the snows of the Caucasus take an intermediate position." Mr. Sherring's style is not highly literary, but he narrates so well that the reader's interest never flags for a

^{*}Western Tibet and the British Borderland. By Charles A. Sherring, M. A., F. R. G. S. London: Edward Arnold, Publisher to the India Office. Pp. 367.

moment. The chapters cover a wide range of topics: e. g., "Bhotia Marriage Customs," "Tibetan and Bhotia Death Ceremonies," "Religion and Government in Tibet," "Mansarowar and Kailas, the Abode of the Gods," "The Passes to Western Tibet," and "Customs of the Western Bhotians," "A Tibetan Trade Route," etc. A number of excellent maps are included in the volume. Many an interesting incident is woven into the narrative. It would be hard to find anything more unique than the author's account of the manner in which a hundred Tibetans, armed only with stones and axes, hunted down and slew a maneating tiger. On the whole, it would be difficult to find a more readable book on the mountains, people, and customs of Tibet.

W. F. B.

It is a choice, and in some respects rather "THE VOICE OF remarkable, collection of excerpts from the THE MOUNTAINS." literature of the mountains that has been gathered in this dainty little volume.* Scarcely any aspect of mountain scenery has been overlooked, and every mood of the beholder finds some expression appropriate to itself. French, German, English, and American writers have all been laid under tribute. Most of the pieces are poetry, but there also are quite a number of well-chosen prose extracts. The grouping of the contents of the volume is partly geographical and partly thematic, as is evident from the following selection of general headings: "The Mountains," "In the Valley," "Man and the Mountains," "Cloud Pageantry," "Storm," "Hills and Fells of England," "The Alps," "Hellas and the Orient," "The West," etc. Both in size and in content the book is well adapted to become the pocket W. F. B. vade-mecum of a mountaineer.

"IN THE HEART OF THE
CANADIAN ROCKIES."

Cannot help being interested in this book.†

Besides giving a very good account of the general aspect of these mountains and a description of the peaks of greatest importance, with choice photographs, there are a great many first ascents detailed here, and those one alway's enjoys. One feels, perhaps, on noticing the footnotes that explain many common mountaineering terms, that the book was written with a view to instructing the non-climbing public who

^{*}The Voice of the Mountains. Edited by Ernest E. Baker and Francis E. Ross. London: George Routledge & Sons, Ltd. New York: E. P. Dutton & Co. Pp. 294.

[†] In the Heart of the Canadian Rockies. By James Outram. New York: The Macmillan Company. 1905. Pp. 466.

have never cached any provisions, nor looked into the vast recesses of a crevasse, nor contemplated a couloir. This perhaps betrays the attitude of a recent convert to Alpine recreation. One of the most interesting chapters is that devoted to Lake Louise. There are some most excellent photographs of that lovely lake and descriptions of climbs made in its vicinity, which make one long for an opportunity to camp there and explore its neighborhood. The first ascents, which indeed comprise nearly the whole book, are given with a good deal of detail and convey much useful information to the would-be climber of these mountains. For this reason Mr. Outram has made a valuable contribution to alpine literature. So far as the Selkirk Range is concerned, however, his maps are superseded by those just completed by the Topographic Survey under the auspices of the Dominion Government. E. M. B.

"THE GARDEN BOOK Very delightful, as well as practical, is the Garden Book of California, by Belle Sum-OF CALIFORNIA." ner Angier. It is an artistic little volume, illustrated with photographs of suggestive features of the most attractive California gardens. Its message is more particularly for the amateur, and it is written with especial consideration of California climatic conditions. Very valuable are the hints on irrigation, the preparation of soil for planting, the gathering and preservation of seeds, the transplanting of seedlings, and the destruction of insects. Besides these more general features of gardening, the book deals with special problems, such as rose culture, ferns and ferneries, the cultivation of native flowers and shrubs, back-yard problems, and, most alluring of all perhaps, outof-door living-rooms. The book, published by Paul Elder and Company, and very prettily decorated by Spencer Wright, seems to fill a long-felt need of the amateur gardener.

The National Geographic Magazine for December contains a brief article by Edwin Swift Balch on "Highest Camps and Climbs." He compares the achievements of T. G. Longstaff and W. W. Graham, and concludes by saying that "to any one who will look at the facts intelligently and without prejudice, there can be no doubt that Dr. Longstaff has made the highest camp (23,000 ft.) and the second highest ascent, and that to Mr. Graham still belongs the coveted honor of the record ascent (24,015 ft.)." The reviewer has added the probable altitudes in the quotation just given. Since Mr. Longstaff reached an alti-

^{*} The Garden Book of California. By Belle Summer Angier. Paul Elder and Company, San Francisco.

tude of about 24,000 feet on Gurla Mandhata, it is apparent that he is a close rival of Mr. Graham, who established his record on Kabru. The most complete accounts of these ascents are the following: T. G. Longstaff, "Six Months' Wandering in the Himalaya," (The Alpine Journal, 1906, vol. XXIII, pp. 202-228); Mr. Longstaff's chapter in Sherring's book on Western Tibet, reviewed in this number of the Bulletin; W. W. Graham, "Travel and Ascents in the Himalaya," (The Alpine Journal, 1884, vol. XII, pp. 25-52); Emil Boss and Douglas W. Freshfield, "Notes on the Himalaya and Himalayan Survey," (The Alpine Journal, 1884, vol. XII, pp. 52-60); Edwin Swift Balch, "The Highest Mountain Ascent," (Bulletin of the American Geographical Society, 1904, vol. XXXVI, pp. 107-109).

FORESTRY NOTES.

EDITED BY J. B. LULL.

Press Bulletin No. 142, issued by the Forest FOREST RESERVES. Service on December 8, 1906, gives briefly an interesting exposition of the workings of the National forest policy in the use of reserves. That the forest reserves are rapidly being changed from objects of Government charity to sources of revenue is conclusively shown by figures comparing the receipts during the fiscal year 1905-1906 as against the previous year: The total revenue brought in was \$767,219.96, as against \$60,142.62 for the previous year. In timber sales there were disposed of for immediate or early removal nearly 300,000,000 board feet of lumber, at stumpage prices ranging up to four dollars per thousand, as against 96,060,258 board feet, with a maximum price of two dollars and fifty cents per thousand, in 1904-1905. During the last fiscal year the area of forest reserves was increased from 85,693,422 acres to 106,999,138 acres.

It must not be inferred that this revenue has been so greatly increased at the expense of reserve property. It has resulted from the fuller utilization of forest resources. Mature timber in which deterioration offsets growth has been removed, resulting in a betterment of forest conditions because it was cut in such a way that reproduction of valuable species followed. Grazing has been sold, but under regulations which prevent harm to forage. Privileges of various kinds have combined to swell the revenue from reserves while making them yearly more valuable.

During its last session Congress enacted the wise provision that ten per cent of the gross receipts from forest reserves be made over to the States in which they are situated, for the benefit of the counties which would otherwise receive no revenue from a part of their area. California's allotment this year will be \$8,192.12. This amount is exceeded only by the States of Colorado and Utah.

The saving of reserve property which resulted from the organized care of the reserve force was undoubtedly worth more than the whole cost of administering the reserves. Only about eight fires of any consequence occurred on the reserves during the calendar year 1905, a season of extreme dryness. This small number was due in large part to the system of patrol, which leads to the discovery of fires before much damage has been done.

New Reserves. The Monterey and San Luis Obispo forest reserves, which were created during the past summer, will be manned at an early date. Otto Tortensen, Ranger-in-Charge of the Monterey reserve, aims to have his force at work on a trail from the Arroyo Seco River to the Coast early in January. Mr. Tortensen will maintain headquarters at Salinas. The San Luis Obispo reserve will be in charge of Supervisor E. S. Mainwaring, with headquarters at San Luis Obispo. The Monterey reserve has an area of 335,195 acres; the San Luis Obispo reserve, 363,350 acres.

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Under the caption "American Forestry Hon-FOREST SERVICE ored Abroad," Press Bulletin No. 144 of the HONORED. Forest Service announces that the Forest Service of the United States Government is to become a member of the International Association of Forest Experiment Stations. Other countries represented in the association are Germany, Austria, France, Italy, Russia, and Switzerland, the leading countries in the practice of scientific forestry. The purpose of the association is to standardize experimental work generally, so that the methods of investigation in each country will be uniform, and to collaborate in researches affecting two or more of the countries interested. Americans will feel proud of the rapid progress made in forestry here, which enables the Forest Service to enter this association on equal terms with the European countries through whose researches, conducted for many years, a science of forestry has been built up.

STATE AND FEDERAL CO-OPERATION.

By an Act of the Legislature, approved March 16, 1903, the State of California made an appropriation of \$7,500 each year for two successive years, to be used in forestry work in co-operation with the Forest Service, the Service to contribute an equal sum. In the language of the act, the appropriation was made for the purpose of "studying the forest resources of the State and their proper conservation, and especially with a view of establishing a proper State forest policy." This contract has been renewed twice since the conclusion of the first two years with an additional appropriation of \$5,000 by both the State and the Forest Service for each succeeding year.

This co-operative work, which will be completed by the end of the present fiscal year, has yielded, in the form of maps, reports, and practical demonstrations, invaluable data on all phases

of California forestry.

One important result of this work was the passage of the act of March 18, 1905, which created a State Board of Forestry and

the office of State Forester. As enacted, this law lacked much of the machinery included in the original bill to enforce its provisions, yet as an educational measure and a step in the right direction it has served a useful purpose.

All Californians having the permanent welfare of their State at heart will feel grateful to the Forest Service for its unassuming and thorough work in collecting reliable data on such a difficult question. The difficulties which beset one engaged in such work must be experienced to be properly realized. In speaking of this work recently, Governor Pardee said: "Every cent of this money was spent wisely and honestly, as I knew it would be."

The first public report of State forestry work REPORT OF was submitted to Governor Pardee on Decem-STATE FORESTER. ber 8th. This report shows the intimate relation existing between the forests of California and practically every other industry, records the experiences gained under the Forestry Act, and recommends specific changes in the law to provide for its fuller enforcement. The growing field for the practice of technical forestry is alluded to with the recommendation that the fixed salaries for assistants, which is now so low that technically trained men cannot be secured, be removed, leaving this to be arranged by the State Board of Forestry. The present attempt to protect forest areas from fires by the services of volunteer fire wardens serving without pay or direction is shown ineffective. It is urged instead that the State accept an equal burden with the counties in protecting this resource of more than local importance, and employ salaried fire wardens, to be on duty during the dry season only. The report is now in press and will be available for distribution within a few days.

It is a matter for congratulation that the CALIFORNIA California Redwood Park has suffered no REDWOOD PARK. damage from fire during the past season. The danger from outside fires has been diminished greatly by the opening of fire-lines from forty to sixty feet wide on the ridges surrounding the park. These lines will soon encircle the park, as a gap about one and a half miles wide is all that remains. When this is crossed, and the lines improved somewhat by widening and further clearing, no great apprehensions will be occasioned from any but the largest fires. These lines are not supposed to be automatic, but to serve as vantage-points from which approaching fires can be fought and backfiring be done safely. They will be supplemented by a patrol during the dry season and by a telephone system connecting them with the warden's headquarters for use in summoning aid, etc.

A substantial improvement of much value and convenience has been added recently by the construction of a private telephone line from Boulder Creek to Governor's Camp in the center of the park. A new log barn and a structure for housing employees and tools

have been erected during the past year.

A survey of the park boundaries is now under way. All brush and small trees are being removed from a path four feet wide, and guide stakes are being set where trails and roads cross the boundary. When completed this survey will establish the park boundaries and permit the exclusion by fencing and otherwise of straying stock, hunters, etc.

During the coming spring a substantial lodge for the warden will be built at the park entrance on a tract of land donated to the State for this purpose by Mr. H. L. Middleton. A water system for Governor's Camp and the warden's lodge, together with a road-sprinkling apparatus, are soon to be provided.

REVISED BY-LAWS OF THE SIERRA CLUB.

(ADOPTED APRIL 29, 1905.)

INCORPORATED JUNE 4, 1892.

ARTICLE I.-Name.

The name of this corporation shall be the SIERRA CLUB.

ARTICLE II .- Purposes.

The purposes for which this corporation is formed are as follows, to wit: To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains; to take, acquire, purchase, hold, sell and convey real and personal property, and to mortgage or pledge the same for the purpose of securing any indebtedness which the corporation may incur, and to make and enter into any and all obligations, contracts, and agreements concerning or relating to the business or affairs of the corporation, or the management of its property.

ARTICLE III .- Place of Business.

The place where the principal business of said corporation is to be transacted is the City and County of San Francisco, State of California.

(The foregoing articles, forming a part of the Articles of Incorporation, can be changed only by amending such articles as provided by law.)

ARTICLE IV .- Directors and Officers.

SECTION I. The government of the Club shall be intrusted to nine of its members, to be known as the Board of Directors, who shall elect from their number a President, Vice-President, Secretary, and Treasurer.

SEC. 2. The Directors shall enter upon their term of office on the first Saturday in May following their election, and shall thereupon elect the officers specified, who shall be the officers of the Club as well as of the Board, and such Directors and Officers shall hold office for one year and until their successors are elected and have qualified. SEC. 3. The Board of Directors shall be the managing board of the Club, elect new members to the Club, control all expenditures and property of the Club, fill vacancies in the Board and its officers, and act for its interests in any way not inconsistent with these by-laws; but shall have no power to subject the Club to any liability beyond the amount of the corporate funds.

ARTICLE V .- President.

The President shall preside at all meetings of the Club and of the Board of Directors; enforce the by-laws; call such meetings as he is empowered to call; nominate all Standing Committees, of each of which he shall be ex officio a member, said nominations to be presented to the Board of Directors for confirmation at the commencement of his term of office; exercise general supervision over the affairs of the Club; have such other powers as ordinarily accompany such office; and at the end of his term of office present a report of the work accomplished by the Club during the preceding year, and outline a policy for the future, such report to be published in the SIERRA CLUB BULLETIN.

ARTICLE VI.-Vice-President.

During the absence or disability of the President the Vice-President shall act in his place; and in case both President and Vice-President are absent from any meeting, the Secretary shall call the meeting to order, and an acting President be elected by the meeting.

ARTICLE VII.-Secretary.

The Secretary shall keep an exact record of the proceedings of the Club and of the Board of Directors; have charge of the records of the Club; give notice to the members or the Directors, as the case may be, of meetings of the Club and of the Board; shall receive and receipt for the dues and other moneys belonging to the Club, and deposit the same, in the name of the Club, with the bank or banks designated by the Board of Directors; submit names of persons recommended for membership in the Club to the Board of Directors for election; submit to the members, to be voted on, such questions as may be certified to him by the Board of Directors for that purpose; issue from time to time to the members circular letters, informing them of the work and condition of the Club; and, at the end of his term of office, shall present to the Board of Directors a report giving the history of the Club during the previous year, such report when approved by the Board, to be published in the SIERRA CLUB BUL-LETIN.

ARTICLE VIII .- Treasurer.

The Treasurer shall, under the general supervision of the Board of Directors, disburse all moneys belonging to the Club, excepting such as are in the Permanent Fund, of which the accrued interest only shall be at his disposal for Club use; keep proper books of account; and at the end of his term of office, and at such other times as may be required, submit to the Board of Directors a report of the expenditures and the financial condition of the Club, and his annual report, when approved by the Board, shall be published in the Sierra Club Bulletin.

ARTICLE IX.-Honorary Officers.

SECTION I. The Board of Directors may, at their discretion, elect annually, by a unanimous vote, an Honorary President, who must be a member of the Club, and who shall have pre-eminently distinguished himself in mountaineering, exploration, or research.

SEC. 2. The Board may also elect annually four Honorary Vice-Presidents, who must be members of the Club, and who shall be selected for such offices by reason of their prominence in matters identified with the purposes for which the Club was organized or because of some material aid and assistance they may have rendered the Club.

ARTICLE X.-Librarian.

A Librarian shall be elected annually by the Board of Directors. He shall be a member of the Club and have charge of the Club's library; correspond, on behalf of the Club, with other similar clubs, particularly with a view to securing exchange of publications with such clubs; have power to select, from the membership of the Club, assistants to aid him in his work; and shall also make an annual report of the condition of the library.

ARTICLE XI.—Standing Committees.

Section I. The Standing Committees, to be nominated by the President and presented to the Board for confirmation, shall be as follows, viz.: An Auditing Committee, a Committee on Publications, an Outing Committee, a Committee on Local Walks and Excursions, and a Le Conte Memorial Lodge Committee.

SEC. 2. The Auditing Committee shall consist of three members of the Board of Directors. Its duty shall be to examine and audit all accounts of the Club at the end of each Treasurer's term of office and at such other times as the Board may direct.

SEC. 3. The Committee on Publications shall consist of nine members, the Chairman of which shall be the Editor of the SIERRA CLUB BULLETIN. It shall select papers and articles to be published in the SIERRA CLUB BULLETIN, and shall exercise general supervision over all publications of the Club not otherwise

provided for.

Sec. 4. The Outing Committee shall consist of three members, at least one of whom shall be a member of the Board of Directors. It shall have full charge of the preparation, management, and conduct of the Annual Outings of the Club and of such special Outings as the Committee may arrange for. The Chairman of this Committee shall be the manager of such Outings. All such Outings shall be conducted on an independent financial basis, and the Club funds shall not be available for such purpose.

SEC. 5. The Committee on Local Walks and Excursions shall consist of five members, whose duties shall be to arrange and

conduct local walks and excursions.

SEC. 6. The Le Conte Memorial Lodge Committee shall consist of three members, at least one of whom shall be a member of the Board of Directors. It shall have charge of the Le Conte Memorial Lodge in Yosemite Valley and of all other similar properties that may be owned by the Club.

ARTICLE XII.-Southern California Section.

The formation of a "Southern California Section of the Sierra Club" is authorized. Only members of the Sierra Club who reside in Southern California shall be qualified to become members of the Section. The objects of this Section shall be to advance the interests of the Club in Southern California. The Section shall elect its own officers, and is authorized to take independent action in matters within the purposes of the Club, but which are of special interest to Southern California. To this end the Section is authorized to collect data and information concerning the mountains of Southern California, and to conduct local outings. Information collected by the Section and articles prepared under its direction shall be published in the SIERRA CLUB BULLETIN, if the Committee on Publications of the Sierra Club deem the matter submitted of interest to the whole Club. The Section shall be a subordinate body of the Club, and shall, as such, take no part in the management of the Club. None of the funds of the Sierra Club shall be used for the purposes of the Section, unless specially authorized by the Board of Directors. The Section shall provide and disburse its own funds. Southern California, within the meaning of this article, shall include the Counties of Santa Barbara, Ventura, Los Angeles, San Bernardino, Orange, Riverside, and San Diego.

ARTICLE XIII.-Nomination of Directors.

The Board of Directors shall, at least five weeks previous to the annual election, appoint from the members of the Club at large a Nominating Committee of five. It shall be their duty to nominate a ticket of at least eighteen candidates for Directors for the ensuing year; provided, however, that the name of any member proposed in writing to the Committee by any ten members of the Club shall be added to such ticket, and also provided that the name of any Director who shall have been absent from any three consecutive meetings of the Board during the preceding year without furnishing an excuse in writing which shall have been accepted by the Board as sufficient, shall not be placed on the ticket. Within two weeks after its appointment, the said Committee shall file its report with the Secreary of the Club, who shall, at least two weeks previous to the annual election, have printed and mailed to each member of the Club a ballot of such nominees. This ballot shall have the names of all nominees arranged in alphabetical order, with a blank space for the insertion of any additional name, and opposite each name a space for the marking of a cross. Upon said ballot shall be the following words:-

"BALLOT FOR BOARD OF DIRECTORS OF SIERRA CLUB.

"Annual Election, Saturday, April [Here insert date of annual election.]

"Polls open from I to 4 P. M.

"DIRECTIONS FOR VOTING.

"Vote for nine candidates by marking a cross opposite the names of the candidates selected. Vote in person at the annual elec-

"tion or mail your ballot; in which case in-"dorse your name on the envelope; otherwise

"the ballot will not be counted. The election

"is so conducted by the judges as to keep "each vote secret."

With such ballot the Secretary shall mail a stamped envelope, with the following address and words printed thereon:—

"BOARD OF DIRECTORS, SIERRA CLUB,

[Here insert office address.]

"SAN FRANCISCO, CAL.

"Ballot from...."

ARTICLE XIV .- Election of Directors.

Section I. The annual election for Directors shall be held on the last Saturday of April of each year, and the voting shall be by ballot. No notice of such election, except that given by the mailing of such ballot, shall be necessary.

SEC. 2. The polls shall be open at I o'clock P. M. and shall be kept open until 4 o'clock P. M. on the day of election. A

plurality of votes shall elect.

SEC. 3. The Board of Directors shall appoint five Judges of Election from the members of the Club at large to supervise said election, a majority of whom shall be competent to act, and the Secretary of the Board shall refer to them unopened all the

envelopes containing ballots.

SEC. 4. The Judges of Election shall, at the time of the annual election and before opening the envelopes, check off the names of those thus voting, and shall thereupon open and destroy said envelopes and, without examining the ballot, cast said ballot in a box provided therefor. At the close of the election the judges shall count and report to the President and Secretary in writing the number of votes cast for each candidate and the names of those elected to serve as Directors; and the Secretary shall thereupon notify in writing the members elected.

ARTICLE XV .- Removal from Office.

Any Director or other officer of the Club may be removed from office for good cause shown, by an affirmative vote of not less than three fourths of the members present at a special meeting of the Club convoked for that purpose, or by a three-fourths vote of all ballots cast at a special vote of the Club as provided for in Article XXIII.

ARTICLE XVI.-Meetings of the Board of Directors.

Meetings of the Board of Directors shall be held when called by the President or by three members of the Board. The Secretary shall mail to each member of the Board a written notice specifying the time and place of meeting at least two days prior thereto. A majority of the Directors shall constitute a quorum and form a Board for the transaction of business.

ARTICLE XVII.-Meetings of the Club.

The Club shall hold an annual meeting at such time as the Directors may decide, such meeting to be held primarily for the reading of papers or the delivering of lectures on subjects of interest to the Club, and also for the purpose of exhibiting stere-

opticon views of mountain scenery. Special meetings may be called by the Board of Directors, and the Board shall at the written request of at least thirty members call a special meeting of the Club. Fifty members shall constitute a quorum at any meeting, and a less number shall have the power to adjourn a meeting until a quorum shall be present. The Secretary shall give notice by mail to each member of the time, place, and object of any meeting at least one week prior thereto.

ARTICLE XVIII .- Dues.

SECTION 1. The first year's dues of newly elected members shall be five dollars, payable within two months after election.

SEC. 2. The annual dues of all members thereafter shall be three dollars, payable in advance on April 1st. Notice of such dues shall be sent by the Secretary to members on or near that date, and all members whose dues are unpaid on December 1st shall have notice of that fact sent to them; and if such dues are still unpaid on the first Saturday in May in the year following, they shall thereupon cease to be members, and the Secretary shall cancel their names from the membership list, but such membership may be revived by the Board of Directors in its discretion and upon such terms as it may decide. The President and Secretary are authorized to remit any dues sub silentio, when they deem it advisable.

Sec. 3. Any person may become a life member upon the payment of fifty dollars at any time after his election to membership, and shall thereafter be exempt from the payment of dues.

ARTICLE XIX.-Permanent Fund.

All moneys received for life membership and such other sums as may be received or appropriated by the Board of Directors for permanent investment shall be securely and separately invested as a Permanent Fund, the income only of which shall be expended.

ARTICLE XX.-Membership.

Section 1. Elections to membership shall be made by the Board of Directors, and the affirmative vote of at least seven members of the Board shall be necessary to election. Proposals for membership shall be made in writing by a member of the Club and presented to the Secretary, who shall thereupon mail each candidate a circular of information concerning the Club, a copy of these by-laws, and a postal card addressed to the Board to be signed by such candidate indicating that he desires to become a member, and if elected will assent to the by-laws. As soon as the Secretary shall receive at least six such postals signed

by the candidates, he shall thereupon prepare a ballot containing the names of such candidates, their addresses, and the names of the members proposing them, and shall mail a copy of such ballot to each member of the Board of Directors, who shall, upon receipt of such ballot, indicate thereon the nature of his vote as to each candidate and return such ballot to the Secretary. The Secretary shall notify each newly elected member of the fact of his election, and also that his dues for the current year are payable. Upon receipt of such dues, which must be paid within two months (otherwise, the election shall be void), the Secretary shall enroll the name of such person on the regular membership list.

SEC. 2. Honorary members, not to exceed twenty-five in number, may be elected by a two-thirds vote of the entire Board, but they shall not be required to pay any dues.

ARTICLE XXI.—Resignation of Members.

Section 1. All resignations must be made in writing, addressed to the Board of Directors.

SEC. 2. No resignation of membership shall be accepted or shall take effect until all indebtedness to the Club shall have been paid by the resigning member.

SEC. 3. All interest in and to the property of the Club and privileges of the Club of such resigning members, or of any member ceasing to be such by dismissal or death, or from any cause, shall cease and revert to the Club.

ARTICLE XXII.-Discipline.

Any member may be suspended or expelled by a vote of at least seven members of the Board of Directors, but no such vote shall be taken until after the member shall have been furnished with a statement of the charges preferred against him, and shall have been given at least one week's notice of the time when the same will be considered by the Board; and every such member shall have the right to appear before the Board, and be heard in answer to the charges, before final action thereon shall be taken.

ARTICLE XXIII .- Ballot by the Club.

Whenever the Board of Directors shall decide that any question submitted to it for its decision is of such importance that it should be submitted to a vote of the members of the Club, the Board shall cause to be certified to the Secretary the form in which such question shall be submitted and shall direct him to have such question printed on the regular annual ballot for Directors; or, if it should order a special vote to be taken on

the question, the Secretary shall thereupon prepare a special ballot with such question printed thereon, and the mailing of such ballot and the canvass of the vote on such question shall be conducted in all other respects in the same manner as the annual election of Directors is conducted. A majority vote of all the ballots cast shall decide the question. The Board shall, upon the written request of fifty members of the Club, submit to a vote of the Club such question as they may propose.

ARTICLE XXIV.—Construction of By-Laws.

On all questions as to the construction or meaning of the by-laws and rules of the Club, the decision of the Board of Directors shall be final, unless rescinded by the Club at the annual meeting or at a special meeting convoked for that purpose, or by vote as provided for in the preceding article.

ARTICLE XXV .- Amendments to By-Laws.

These by-laws are fundamental, and shall not be altered, amended, suspended, or repealed, in whole or in part, except by a two-thirds vote of all the ballots cast at any annual or special election, which ballots shall be so printed as to enable the members voting to express their wish as to the adoption or rejection of any proposed amendment or alteration. Such proposed amendment or alteration must be printed in full, and mailed to each member with his ballot, and shall only be submitted to a vote of the Club when presented in the manner indicated in Article XXIII for presenting questions to be voted on.

CHARTER MEMBERS.

(Only the names of such charter members as were on the membership-list at the date of the adoption of the By-Laws are given below.)

Anderson, Prof. M. B. Babcock, William Bailey, Charles A. Bartlett, L. de F. Beatty, Hon. Wm. H. Blake, E. T. Blum, Max Bradley, Prof. C. B. Branner, Prof. John C. Clark, Galen Davidson, Prof. Geo. Denicke, E. A. Denman, Will Drew, E. R. Dyer, H. P. Eddy, H. H. Greene, Prof. E. L. Gregory, Warren Griffin, Prof. James O. Harrison, Hon. R. C. Henry, W. H. Hoffman, Dr. C. von Hopkins, Timothy Hutchinson, James S. Jepson, W. L. Jordan, President D. S. Keeler, Charles A. Keep, Prof. Josiah Keith, William Kerr, Mark Brickell Lawson, Prof. A. C. Le Conte, Mrs. J. N.

Le Conte, Joseph N. Lemmon, Prof. J. G. Libby, Dorville Loughridge, Prof. R. H. Marx, Prof. Chas. D. McAllister, Elliott McLean, Rev. J. K. Mills, D. O. Mills, Mrs. C. T. Molera, E. J. Muir, John Muir, Miss Wanda Murdock, Charles A. Myrick, M. H. Olney, Warren Olney, Warren, Jr. Page, Charles Palache, Charles Perkins, Hon. Geo. C. Powell, H. A. Price, R. M. Price, W. W. Reinstein, J. B. Richter, Dr. C. Max Sanford, Prof. F. Senger, Prof. J. H. Shinn, Charles H. Smith, N. T. Taylor, Edward R. Thayer, I. E. Van Dyke, E. C. Vecchi, Dr. Paolo de

